THE IRON TRADE REVIEW

Volume XLIV CLEVELAND, FEBRUARY 25, 1909 Number 8

READJUSTMENT

PROCEEDS WITHOUT DISASTROUS DEMORALIZATION.

Leading Interests Still Influenced by Spirit of Co-operation — Confusion Due to New Basing Points.

The declaration of the open market in steel prices has naturally caused considerable confusion. The spirit of co-operation developed during the 15 months' campaign for the maintenance of prices is still, however, a factor, and while it is probable that bottom quotations have not been reached, there is a tendency among the leading interests to co-operate. This is shown in the fact that many companies are naming about the same prices, and that there is a general agreement not to abandon extras for rolling other than base sizes. The readjustment of wages seems inevitable.

New Basing Methods

Present confusion is probably due as much to the tendency to abandon Pittsburg as the sole basing point as it is to changes in prices. The time-honored custom of naming prices f. o. b. Pittsburg plus freight to other parts of the country is doomed, because of the relatively decreased importance of Pittsburg as a manufacturing center. Mills will more and more take advantage of their location in making prices. If this change were to come suddenly, it would work to the great disadvantage of many consumers of semi-finished products. If, for example, the Cleveland district were compelled to make Pittsburg prices plus freight to Cleveland and then freight on the finished products for western shipment, manufacturers of finished products and machinery would be heavily handicapped in Cleveland as compared with Chicago. But it seems probable that the Chicago and eastern quotations will, to a large extent, be based on Pittsburg prices, with a part of the freight from Pittsburg added. During the past few days, many mills have made quotations at their own plants, but a more definite policy will probably be adopted at an early date. Very little new business has developed since price reductions were made, but specifications are coming in more freely, accompanied with very plain intimations that buyers expect to be protected on prices. Considerable time has been consumed in figuring on costs and in readjusting contracts to the new quotations.

Price Reductions

The new prices on finished material show reductions as follows: Bars, hoops and bands, $4 per ton; plates and shapes, $6; sheets, $3 to $5; wire, $1; steel pipe, $6 to $10; boiler tubes, $6 to $10; wrought iron pipe, $2 to $4. Price concessions on tin plate are not expected to be heavy. Quotations on billets and sheet bars have not yet been announced.

Pig Iron Conditions

It is too early to determine the effect which the lowering of steel prices will have on the pig iron market, but it is at present dull, with a tendency toward softness, especially on the southern product. Reports from eastern furnaces indicate a slight decrease in stocks.

Coke and Old Material

The coke market continues dull with low prices being named for prompt shipment. It is generally expected that lower prices will prevail on old material, which has been weak for some time, but very little change in prices is now noticeable.

MERCHANT PIPE PRICES.

(Special Telegram.)

Pittsburg, Feb. 24.—Merchant pipe reduction amounts to $6 to $10 with preferentials instead $4 to $8, as stated in an earlier report.

OPEN MARKET

DECLARED BY LEADING STEEL MANUFACTURERS.

Price Maintenance Policy Abandoned at Meeting of Directors of American Iron and Steel Institute—Judge Gary's Statement.

As president of the American Iron and Steel Institute, Judge Gary called a meeting of its directors Thursday, Feb. 18, at the same time inviting also some of the leading manufacturers of iron and steel to attend. Judge Gary was desirous of having a full representation, but some of the manufacturers whose presence was especially desired could not be reached in time, and others who were invited did not respond. There was, nevertheless, a good attendance. As a result of the meeting, the following statement was given to the press by Judge Gary:

Following the panic of October, 1907, the iron and steel industry was in jeopardy. Jobbers and consumers throughout the country had purchased large stocks at prices prevailing when conditions were favorable, and these were undisposed of. Pending contracts for construction which involved large purchases of iron and steel were extensive. Contracts for new furnaces, mills and equipment, and for raw and semi-finished material had been made by large numbers. An immediate and radical reduction in prices would have meant bankruptcy to multitudes. To prevent disaster and ruin, and at the request of scores who were interested, a large percentage of the leading men connected with this industry met to advise with each other in regard to the best interests of all concerned and including the general public. Various meetings followed from time to time up to the middle of June, 1908. Accurate reports of these meetings were given to and published by the newspapers. Partly, at least, as a result, stability of prices, as distinguished from wide and sudden fluctuations, existed until about the beginning of 1909, although no agreements were made to maintain prices and notwithstanding a small percentage of manufacturers stood aloof from the conferences.

For a year preceding Jan. 1, 1909, there was a gradual, though not entirely regular, improvement in the iron and steel trade, and an increase in the sales

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THE WEEK IN IRON CENTERS

PITTSBURG.

Some Confusion Prevails but Demoralization is Not Threatened.

Office of THE IRON TRADE REVIEW, 510 Park Bldg., Feb. 23.

The declaration of an open market on iron and steel products has thrown the trade into a state of confusion from which it is now attempting to free itself. While reductions of prices had been anticipated for some time, the abruptness of the inception and the sweeping character of the new policy proclaimed quite astonished both buyers and sellers and sufficient time has not yet been had for a calm and accurate analysis of the situation or for a test of the results likely to be accomplished. Increased inquiries from patrons have been brought to the mills, but the gain in tonnage actually booked has not been of a significant amount. The abandonment of official quotations, however, is looked upon as the buyer's opportunity and a considerable volume of new business is expected to be stimulated soon.

While the market appears considerably disturbed at present, there is no evidence of a chaotic state, nor is it manifest that there is grave danger of a runaway condition. Lower prices have been swiftly named in some finished lines, but in others there is shown a spirit of deliberation and caution in establishing new quotations. Steel makers are also reluctant to stake some market precedents in the competitive struggle. In this respect it has been determined that regardless of the extent to which the cutting of base prices may go, there shall be no change in the extras asked on certain materials, which have been in force for years. This decision has a particular bearing upon the plate and merchant bar markets.

Current prices represent reductions of $4 a ton on merchant bars, hoops and bands, $6 on plates and structural shapes, $3 to $5 on sheets and $1 on wire products. New official discounts announced on tubular goods entail concessions of from $4 to $8 on merchant pipe and $6 to $10 on boiler tubes. To a great extent the lower prices on finished material apply only to attractive business for reasonably prompt shipment and not all orders for any delivery may command such quotations. At the same time there is a determination displayed by some interests, especially by the subsidiaries of the United States Steel Corporation, to secure what they regard as their rightful share of current orders and this fact is leaving present prices, except where official announcements have been made, within very indefinite limits.

Pig Iron.—Makers of merchant pig iron, figuring upon present costs, generally take the position that this market, by reason of its low stage, long prevailing, has already fully discounted the effect of the reduced prices in finished and semi-finished material. It is also held that the coke market has reached a low ebb and that if any readjustment must be made in the cost of pig metal, it will have to be in ore values. The ore sellers, however, are not yet convinced that such a course would be expedient.

The market is showing little effect of the open competition in finished products. There has been a somewhat better inquiry during the past week, but much of this is from outside districts. Prices are holding at about $16 valley on Bessemer, $15 valley on basic, $15 valley on No. 2 foundry, and $14.25 on gray forge. A local melter purchased about 1,000 tons of malleable for extended delivery. The prices in this grade range from $15.25 to $15.50 valley.

In southern iron, the market for No. 2 has been more squarely settled upon a basis of $12.50 Birmingham, by the action of some of the larger interests in announcing such a quotation for first half delivery.

On prompt and first half shipment on northern iron, we quote as follows:

Bessemer, valley	$16.00 to 16.50
Bessemer, Pittsburg	16.90 to 17.40
No. 2 foundry, Pittsburg	15.90 to 16.15
Gray forge, Pittsburg	15.25 to 15.50
Basic, valley	15.00 to 15.25
Basic, Pittsburg	15.90 to 16.15

Ferro-Alloys.—The market in ferro-alloys is dull and prices are largely nominal. Outside of a few small inquiries there is no interest in the market. We quote nominally 80 per cent ferro-manganese at $43.50 to $44 seaboard with a freight rate of $1.95 to Pittsburg.

Imported 50 per cent ferro-silicon is quoted at $62 to $62.50 Pittsburg on forward deliveries; domestic 12 per cent, $27; 11 per cent, $26; 10 per cent, $25, Pittsburg.

Plates.—At present the new base level on plates is at 1.30c mill. Immediately after the declaration of an open market, one of the large mills established this price and the other principal makers readily signified their willingness to meet this quotation on desirable business. The plate manufacturers, however, have decided that there will be no change in the extras charged as now quoted. Little increase in business has yet developed from the new lower prices, but the inquiries brought out are more plentiful and prospects are considerably brighter. We quote the plate market as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.30c f. o. b. mill. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The price situation in sheets is still very indefinite, as there is a reluctance among makers to establish a new low mark. The disposition of the mills is to guarantee the customers a willingness to meet the lowest prices named and to withhold final invoices until the market more clearly asserts itself. Where a willingness to make quotations is manifested, prices have ranged from $3 to $5 a ton under the recent official level, the latter concession applying to some grades of the corrugated product. The cut in black sheets is currently expected to be about $3 Action in this market is largely dependent upon the concession which the sheet bar makers are willing to make upon the requirement contracts of the sheet manufacturers in this product. The operations of the independent sheet mills of the country are now at from 70 to 75 per cent of capacity.

Tin Plate.—Price concessions in tin plate are not likely to be very heavy, as the market in the past has been quite reasonably held and also because of its seasonable nature, the present date finds a good portion of the contracting in this line for first half delivery already closed. Some makers are still quoting full prices awaiting for the situation to clear itself. Independent tin plate makers are now running their plants at from 90 to 95 per cent of capacity.

Rails and Track Material.—Local rail makers declare there is little prob-

ability that the $28 price on standard sections will be in any way affected by the open market. Specifications are coming in better volume and the rail mills of the Carnegie Steel Co. are running at a higher gait. No new contracts are reported, but those of the Seaboard Air Line, Norfolk & Western and the Southern railway are expected to be closed within the next several months. Several large traction projects are also showing signs of maturing soon. Light rail demand is consistent, the Carnegie Steel Co. booking 1,500 tons the past week. The light rail market has been more or less open in the past because of the competition and low prices named by re-rollers, which have been met by the mills rolling from billets, and this condition still prevails. On present specifications on Bessemer rails we quote as follows, the base price for open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $32; 12-pound, $29; 16-pound, $27; 20-pound, $26; 25 to 45-pound, $25.

Steel.—The semi-finished steel market is attracting the interest of the trade, now that finished products have been more definitely settled, because of its relation to the cost of manufacture of these lines. As billet and sheet bar consumers are well covered by requirement contracts and little new business is being offered, the current prices of this market are still a matter of conjecture or individual opinion. Prices of $20 to $22 mill on billets and $22 to $23 mill on sheet bars are mentioned, but it is not known that any business has been taken at these figures. It is certain that the arrangement which has been in force in billets, to divide the freight over $1 and not exceeding $3, between maker and buyer, will no longer prevail and that both billets and sheet bars will be upon a straight mill basis. This division of freight enabled consumers to obtain their steel at from 50 cents to $1.50 a ton under the official $25 Pittsburg price; so any reduction now made will not be as large as appears upon its face.

Hoops and Bands.—The hoop market has recently been very irregular in the matter of prices and the reductions in this market which have followed the quotation of 1.20c on steel bars, has not been attended by any noticeable results. We quote present prices as follows:

Hoops in carload lots, 1.60c; in less than carload lots, 1.70c; bands, 1.20c, base half extras as per standard steel.

Merchant Bars.—Reports of large tonnages of steel bars having been taken at 1.20c mill are not officially confirmed, but some business has been closed at this figure and this represents the level at which the larger makers are willing to accept attractive business. The reduction applies only to base quotations, as steel makers have determined they will make no change in extras. The bar iron market is very indefinite, some interests still holding for 1.50c Pittsburg, the old rate, while with others any decision in the way of lower prices is made contingent upon the state of the old material market during the next several weeks. We quote:

Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.20c; channels, angles, zees, tees, under 3-inch, 1.30c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance.

Structural Material.—Some contracts ready for closing have been held up temporarily by the developments in the market, and prospective investors are waiting for prices to be established on a settled basis. A price of 1.30c mill has been made on shapes and plates, and this is meeting the ideas of some fabricators, as equalizing plain material cost with the low figures at which they are obliged to accept work. Others, however, are expecting even lower prices. The inquiry in the market is quite fair, being well divided between mercantile and industrial jobs. The McClintic-Marshall Construction Co. during the week took a contract for the extension of the plant of the Nagle Engineering & Boiler Works, Erie, Pa., which will require from 500 to 600 tons.

Merchant Pipe and Boiler Tubes.—The National Tube Co. has issued new discount cards showing reductions of from $4 to $8 in wrought steel pipe, $6 to $10 in lap weld steel boiler tubes and $2 to $4 in wrought iron pipe, effective Feb. 19. This decisive reduction is expected to bring to the market at an earlier date many projects now under consideration which otherwise would have been developed more deliberately. It is believed by makers that the new prices will appear conclusively near rock bottom to the buyers and that consumption will be stimulated.

	Black.	Galv.
⅛ and ¼ inch	72	56
⅜ inch	73	59
½ inch	76	64
¾ to 6 inch	80	70
7 to 12 inch	75	60
PLUGGED AND REAMED.		
1 to 4 inch	78	68
EXTRA STRONG PLAIN ENDS.		
⅛ to ¾ inch	65	53
½ to 4 inch	72	60
4½ to 8 inch	68	56
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inch	61	50

The new card of the National Tube Co. on wrought iron pipe to jobbers in carloads is as follows:

	Black.	Galv.
⅛ and ¼ inch	67	51
⅜ inch	68	54
½ inch	71	59
¾ to 6 inch	75	65
7 and 8 inch	70	55
PLUGGED AND REAMED.		
1 to 4 inch	73	63
EXTRA STRONG PLAIN ENDS.		
⅛ to ⅜ inch	60	48
½ to 4 inch	67	55
4½ to 8 inch	63	51

On lap-welded steel boiler tubes to jobbers in carload lots the National Tube Co. has revised its quotations as follows:

1 to 1½ inch	50
1¾ to 2¼ inch	62
2½ inch	64
2¾ to 5 inch	70
6 to 13 inch	62

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

LESS CARLOADS

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg, Pa.

Wire Products.—The cutting of official prices in wire products in the recent past has been very moderate. Some of the independent mills have been shading by about five cents the recognized market to jobbers of $1.95 in nails, $2.10 in barbed wire, $2.40 in galvanized wire, and $1.80 in plain wire, so that the open market means a level at least $1 a ton under the old basis. The new conditions in the market have had little effect as yet, as the present season is usually quiet in this line.

Coke.—There is little activity in the coke market in the way of new business, but specifications against contracts in both furnace and foundry grades are holding up well. A northern Ohio interest took 5,000 tons of foundry coke for extended delivery at a low price, but there were considerations involved which lessened its bearing upon the market. Spot furnace coke is still available at low prices, and we quote this market at from $1.60 to $1.75 ovens and on contract from $1.75 to $1.90 ovens. On first class Connellsville foundry coke for shipment up to the second half, the price range is from $2 to $2.25 ovens. Beyond that time a higher price is asked. The *Courier's* figures for the week ending Feb. 13 show 24,066 active ovens with a production of 268,958 tons compared with 24,112 active ovens and a production of 262,156 tons the previous week.

Old Material.—Sympathetically the

old material market is weaker with the lower prices in bars and other finished lines, but the extent of its decline has not been shown in the absence of any representative transactions. Some sellers and buyers are keeping closely in touch with the market through inquiries, but are reluctant to accept or make offers. In the present unsettled state of the market, it will probably be early in March when the railroad lists are offered before the true level of the price is established. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $15.25 to $15.75; re-rolling rails. $16.50 to $17; bundled sheet scrap, $12.50 to $13; iron axles, $20 to $21; old iron rails, $17.50 to $18; No. 1 wrought scrap, $16 to $16.50; old car wheels, $15.75 to $16.25; low phosphorus, $17.50 to $18; machine shop turnings, $10 to $10.50; cast borings, $8 to $8.50; No. 1 cast scrap, $14 to $14.50; malleable, $14 to $14.50; stove plate, $11 to $11.50.

CHICAGO.

Freight Differential Between Chicago and Pittsburg Not Determined.

Office of THE IRON TRADE REVIEW, 1328 Monadnock Block, Feb. 23.

The market for finished steel products in this territory is wide open and there are no regular prices. Only one interest, an independent mill, appears to be adhering to any one price even at the reduced level and that interest is quoting the generally accepted figures for transactions of the past few days, namely 1.30c Pittsburg for structurals and plates and 1.20c Pittsburg for steel bars. Other maximum reductions which have come to light and which may be taken as representing the general level of the market are a cut of $4 a ton on sheets, 5 points on steel pipe and $2 a ton on iron bars. Pittsburg basing prices rule generally, but at a conference of the representatives of the leading interest it was decided to adopt Chicago basing prices. Information has not been given out as to what the actual differential between Pittsburg and Chicago is to be, as the prices offered by the leading interest to customers are confidential. Such transactions as have come to light indicate, however, that Chicago prices will be about 15 cents per hundred higher than Pittsburg. Thus far, the leading interest appears to be most active in rounding up tonnage, with the independent interests meeting the competition wherever opportunity offers. The coming of the reductions at the end of the week together with the holiday on Monday greatly reduced the opportunity for seeing the trade and putting the reductions into effect. As a result, the actual tonnage that has been placed is not so great as might seem probable and the market is still very unsettled. Customers are more earnestly engaged at present in protecting themselves on the contracts they already have than in considering the advantage of buying speculatively at the low prices. Without exception all of the mills are protecting their cuscustomers against the decline. Undoubtedly, however, there has been a considerable tonnage contracted for in plates, steel bars and structurals, though it is understood no one is selling beyond July 1. It is apparent that the essential purpose of aggressive selling efforts at the reduced prices is to get as many customers as possible under contract for a limited tonnage, thus fixing as much of the business as probably will come up in the next several months where it will not be subject to troublesome competition and be diverted from mills which have ordinarily handled it. The Carnegie Steel Co. took the contract for 10,000 tons of reinforcing steel bars for the Corrugated Bar Co., of St. Louis.

Pig Iron.—The reductions in the price of steel products will affect pig iron if at all, through the price of ore. If no change is made in the price of ore, it is likely that no radical weakness will develop in the pig iron situation. It seems probable that a further decline of 50 cents is not unlikely, particularly in southern iron, if the consumption of iron does not improve more rapidly. The decreasing extent to which iron shipments are being held up by melters seems to point to some improvement in the consumption. Sales, however, do not indicate any noticeable change in the market. There is far too little business in this territory for the furnaces now in blast. The situation is similar in the south. Nearly all of the tonnage moved is in lots of less than a few hundred tons. Prices we quote unchanged from last week.

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 1	17.00 to 17.50
Northern foundry No. 2	16.50 to 17.00
Northern foundry No. 3	16.00 to 16.50
Southern foundry No. 1	17.35 to 17.85
Southern foundry No. 2	16.85 to 17.35
Southern foundry No. 3	16.35 to 16.85
Southern foundry No. 4	15.85 to 16.35
Southern No. 1 soft	17.35 to 17.85
Southern No. 2 soft	16.85 to 17.35
Southern gray forge	15.85 to 16.35
Southern mottled	15.60 to 16.10
Southern silveries, 4 per cent silicon	18.10 to 18.60
Southern silveries, 5 per cent silicon	18.60 to 19.10
Southern silveries, 6 per cent silicon	19.10 to 19.60
Jackson Co. silveries, 6 per cent.	19.90 to 20.40
Jackson Co. silveries, 8 per cent.	20.90 to 21.40
Jackson Co. silveries, 10 per cent	21.90 to 22.40
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.90 to 18.40
Alabama basic	17.35 to 17.85

Billets.—There is less interest in billets at the present time than in finished products and the question of prices of this product seems to be of less immediate concern than those in other lines. A reduction of $3 a ton represents the market talk, but no transactions are on record to establish that figure. We continue to quote for reference prices of a week ago as follows: 4 x 4-inch rolling billets, $26.50, forging billets, $28.50, base Chicago.

Merchant Bars.—The reductions generally accepted as ruling for the present on bars are $2 a ton on iron bars and $4 a ton on steel bars, making the Pittsburg base prices respectively 1.22c and 1.20c per hundred. The leading interest is quoting Chicago base prices on steel bars which are not given out as yet. Prices on bars from store are not established and going prices are subject to adjustment. Most of the independent mills are meeting competition, but there is little contracting. No new prices on machinery steel have been reported. The only large contract reported is the order for 10,000 tons of reinforcing steel bars for the Corrugated Bar Co., of St. Louis, taken by the Carnegie Steel Co. We quote making such changes as are definitely in force and omitting the prices of a week ago where new prices have not been given out. Bar iron, 1.40c; soft steel bars and bands, 1.35c, half extras.

Plates.—The reduction in the price of plates has resulted in the placing of a considerable tonnage in this territory by the leading interest. The prices made are base f. o. b. Chicago and it is understood that they are 1.45c Chicago i. e., with a differential of 15 cents over the Pittsburg base price of 1.30c, though the nominal price given out by the leading interest was the Pittsburg price plus freight to Chicago or 1.48c. Most of the independent interests continue to adhere to the Pittsburg price. It is safe to say, however, that with the exception of one or two mills no fixed prices are offered. Store prices under the new conditions are unsettled. We omit prices except as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.48c Chicago.

Sheets.—Such transactions as have been made since Friday last indicate

that a reduction of $4 a ton is the maximum cut made thus far in sheets, but a feeling prevails that this may be increased to $6 a ton. No extended buying has come to light and inquiry is light owing to the uncertain situation. The price which is now understood to be current is 2.25c Pittsburg or 2.43 Chicago for No. 28 black sheets and 3.30c or 3.48c Chicago for No. 28 galvanized. We omit quotations from store as none are being made.

Structural Steel.—The generally accepted price of structural steel for this territory following the reductions is 1.30c Pittsburg, although the leading interest is using a Chicago base price. The contracts for fabricated steel let during the week include 1,620 tons for the Bettendorf Axle Co. taken by Geo. W. Jackson, Inc., at a price reported to be $49.25 erected, 800 tons for the Lumberman's Portland Cement Co., Carlisle, Kas., taken by the Minneapolis Steel & Machinery Co., and 850 tons for the Merrimac Portland Cement Co. at St. Louis taken by the Indiana Bridge Co., the price being $65,000 erected. Dyer Bros., San Francisco, will furnish 1,140 tons for the Scottish Rite Temple and 700 tons for the Union Trust building, both in San Francisco. Foreign steel will be used. The Wolvin building at Duluth, which is occupied by the offices of the Oliver Iron Mining Co., is to have five stories added to accommodate the offices of the Minnesota Steel Co., the building of which plant will undoubtedly be pushed during the present year. With the exception of the basing price of 1.30c for beams and channels from 3 to 15 inches inclusive there are no settled prices to report.

Rails and Track Supplies.—The rail situation for the present at least appears to be apart from the price disturbances. The fact that there are but five interests rolling rails, each of which is committed to the belief that the railroads are not delaying the purchase of rails because of the prices, is a condition which is now unique in the market. Even should the price of rails be reduced $3 a ton as has been suggested and railroads should be induced thereby to purchase more largely than they have been, both of which seem unlikely, it is difficult to see wherein this would have any bearing on the purchasing of other products by the railroads. The leading interest took an order for about 1,000 tons of standard sections during the week and the apportionment of the New York Central rails to the Illinois Steel Co. was increased to 33,600 tons. The Gary rail mill is rolling on the open-hearth rails for the Chicago, Burlington & Quincy road. We continue to quote as follows:

Standard Bessemer rails, $28; open-hearth, $30, f. o. b. mill in 500-ton lots and over; less than 500 tons, $2 extra, full freight to destination; light rails, 25-pound to 45-pound, $26; 20-pound, $27; 16-pound, $28; 12-pound, $29. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.15c to 2.25c; with hexagon nuts, 2.30c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—While no definite instructions have been received as yet in the matter of steel pipe reductions, customers have been notified that they may expect a reduction of about 5 points. This would make the Chicago discounts as follows:

	—Steel—	
	Black.	Galv.
¾ to 6 inches, inclusive.....	78.2	68.2
7 to 12 inches, inclusive.....	75.2	60.2

Cast Iron Pipe.—A letting for 1,000 tons of pipe at Bisbee, Ariz., which was set for Feb. 20, has been postponed until March 2. This was the only business of importance reportel last week. Prices of pipe are unchanged and are firm despite the none too strong pig iron situation. We quote as follows: 4-inch water pipe, $28; 6 to 14-inch, $27; larger sizes, $26; gas pipe, $1 a ton higher.

Wire Products.—The record of the trade in wire products and the situation in which it now is do not parallel the record of other products in those things which have brought about price reductions and no steps have been undertaken as yet to follow the other steel products with reductions. It appears that any changes which may be made will be sympathetic rather than the result of pressure within the trade. We quote prices unchanged as follows:

Wire nails, jobbers' carload lots, $2.13; retailers' carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.28; retailers' carload lots, $2.33, with 30c for galvanizing; plain wire to jobbers in carloads, 1.98c, and to retailers in carloads, $2.03. Wire rods, Bessemer, $33; open-hearth, $34; chain rods, $33, f. o. b. Pittsburg.

Old Materal.—The scrap market has been almost devoid of transactions and there has been correspondingly little to establish any changes in price. A continuance on the part of dealers in the policy to hold the scrap that has been stored is the sentiment generally expressed by them, but further declines seem inevitable, whether some of the stocks are released or whether transactions are confined to the small lots that are coming out all the time and must be moved. In the absence of anything to establish changes, we continue to quote the pirces of last week. The Chicago, Burlington & Quincy offers a list of scrap totaling 2,250 tons. We quote gross tons in the first paragraph as follows.

Old car wheels	$15.00 to 15.50
Old iron rails	18.25 to 18.75
Re-rolling rails (4 ft. and over)	15.00 to 15.50
Old steel rails (4 ft. and under)	14.50 to 15.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	13.75 to 14.25
Heavy melting steel	13.75 to 14.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.00 to 13.50
No. 2 R. R. wrought	12.00 to 12.50
Knuckles, couplers and springs	12.75 to 13.25
Shafting	15.75 to 16.25
Iron car axles	18.50 to 19.00
Steel car axles	17.75 to 18.25
Dealers' forge No. 1	10.25 to 10.75
Pipes and flues	9.75 to 10.25
No. 1 cast, 150 lbs. and less	12.75 to 13.25
No. 1 mill	7.75 to 8.25
Mixed busheling (Nos. 1 and 2)	7.75 to 8.25
Country sheet	5.50 to 6.00
No. 1 boiler cut	9.75 to 10.25
Boiler punchings	12.00 to 12.50
Cast borings	6.50 to 7.00
Mixed borings, etc	6.50 to 7.00
Machine shop turnings	8.00 to 8.50
Railroad malleable	12.00 to 12.50
Agricultural malleable	11.00 to 11.50
Stove plate and light cast scrap	11.75 to 12.25
Old iron splice bars	15.50 to 16.00

CLEVELAND.

Chicago Basing Point Places the City's Manufacturers at a Disadvantage.

Office of THE IRON TRADE REVIEW,
Browning Building, Feb. 23.

Iron Ore.—If the reduction in steel prices is to have any effect on the ore market, that effect is not noticeable yet, but leading ore men are firm in the opinion that there will be no reduction of prices. Dredge and tug owners have closed contracts with the unions, and there will be no trouble in any branch of the tug business during the coming season. The union continues to make threats against engineers who have entered into open shop contracts.

On base ores, with the guarantee of 55 per cent on old range and Mesabi Bessemer and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—Things are at a standstill in the pig iron market, and everybody is wondering what effect the reduction in steel prices will have on pig iron. It is generally conceded that unless the reduction causes a considerable increase in demand, it

will be necessary to blow out a number of furnaces at an early date. Prices show little change except in the south. There is no difficulty in buying iron at $12.25 Birmingham for No. 2, and this price could probably be shaded on desirable business. We quote delivered in Cleveland as follows:

No. 1 foundry	$16.50 to 16.75
No. 2 foundry	16.00 to 16.25
No. 3 foundry	15.50 to 15.75
No. 2 southern	16.60 to 16.85
Gray forge	13.75 to 14.00
Bessemer	16.90 to 17.15
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.05

Coke.—Coke for prompt delivery is still very weak, and we quote furnace at $1.50 to $1.60 and foundry at $2 to $2.25. On contracts we quote foundry coke at $2.25 to $2.40, and furnace $1.75 to $1.85.

Finished Materials.—Discussion of the plan to make Chicago a basing point has divided attention with talk about prices since the open market was declared. Cleveland manufacturers would be placed at a distinct disadvantage under the new arrangement. They would be compelled to pay Pittsburg prices on semi-finished products, plus the freight from Pittsburg to Cleveland, and would then be 500 miles farther from the market west of Chicago than the Chicago manufacturers. If this arrangement should continue, it would ultimately encourage the building of steel plants in this locality. While there has been a great deal of confusion since last Thursday, the principal interests seem to be agreed on the quotation of 1.20c on steel bars and 1.30c on shapes, and it is also understood that the reduction in prices on tubes will be about $8, and on sheets from $4 to $5. Very few cancellations have been received, but contracts are being rapidly adjusted to the new prices. Specifications have been coming in more freely with very plain intimations that the buyers expected to be granted the new prices. The price of bar iron is uncertain, owing to reduction in prices of steel and uncertainty as to quotations on scrap. The general belief is that building will be stimulated by the lower prices on structural material. Bids are to be received this week on the building of the Brotherhood of Locomotive Engineers, which will call for about 2,000 tons of steel.

Old Material.—Not enough business has been going on in the past week to justify anything more than nominal price changes. However, almost the entire list has been marked down, ranging from $1 off the price of heavy steel to $2 off on sheet iron. Local mills are buying sparingly. We quote f. o. b. Cleveland as follows:

Old iron rails	$17.00 to 17.50
Old steel rails (re-rolling)	15.00 to 15.50
Old steel rails (under 6 feet)	15.00 to 15.50
Old car wheels	14.75 to 15.25
Old steel boiler plate	12.50 to 13.00
Malleable iron (railroad)	14.00 to 14.50
Steel axles	19.00 to 19.50
Malleable iron (agricultural)	13.00 to 13.50
Heavy steel	13.50 to 14.00
Country mixed steel	12.00 to 12.50
Low phosphorus	16.50 to 17.00

We quote, net tons, as follows:

No. 1 R. R. wrought	14.00 to 14.50
No. 1 busheling	12.50 to 13.00
No. 1 machine cast	13.00 to 13.50
Iron axles	18.00 to 18.50
Axle turnings	9.50 to 10.00
Machine shop turnings	7.75 to 8.25
Grate bars	11.50 to 12.00
Pipes and flues	11.00 to 11.50
Tank iron	10.00 to 10.50
Hoop and band iron	7.50 to 8.00
Sheet iron	6.00 to 6.50
Wrought drillings	7.75 to 8.25
Stove plate	11.50 to 12.00
Cast borings	7.00 to 7.50

CINCINNATI

Pig Iron Market Unsettled and Prices Softening.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Feb. 23.

Pig Iron.—The situation here is considerably unsettled. A weak market condition prevails and prices are a trifle lower than a week ago. Southern furnaces are more inclined to meet quotations made on resale iron. Some producers are willing to accept $12.50 Birmingham for No. 2 foundry and this can be done on prompt shipment or second quarter delivery. One sales agency offered southern iron by circular at $12.25 Birmingham, but this may have been re-sale iron. Northern iron has ruled easier and $15 at furnace in the Ironton district is given as a quotable basis. It is reported, but not confirmed, that $14.75 has been done. These concessions appear to develop but little business and sales are confined to small lots from single car loads to 100 and 200 tons. Inquiry is light. Two consumers in Ohio are in the market for fair amounts. One calls for from 400 to 800 tons, and the other from 400 to 600 tons. A Kentucky foundry is figuring on some No. 4 foundry, on which a price of $11.50 Birmingham failed to obtain the order. A little gray forge has sold at $11 Birmingham, but buyers are claiming lower prices than this in some instances. The unsettled conditions in the steel market are expected to have some influence on pig iron, but the pig iron market has declined to a position so near the cost line at northern furnace that an important decline in northern pig is not expected. How far the southern producers may go to secure business for second quarter is a matter of doubt. There is considerable iron to be delivered to consumers on contracts at $13 Birmingham. It is felt that this may not be accepted by the melters as readily as if the market had remained firm. Buyers appear to be fairly well covered for second quarter in this territory. We quote for prompt delivery, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 1	$16.00 to 16.25
Southern foundry No. 2	15.50 to 15.75
Southern foundry No. 3	15.00 to 15.25
Southern foundry No. 4	14.50 to 14.75
Southern No. 1 soft	16.00 to 16.25
Southern No. 2 soft	15.50 to 15.75
Southern gray forge	14.25
Northern No. 1 foundry	16.70 to 17.20
Northern No. 2 foundry	16.20 to 16.70
Northern No. 3 foundry	15.70 to 16.20
Northern 8 per cent silicon	19.70

Finished Material.—The situation is so unsettled that prices are difficult to quote. Mill representatives have their instructions, but are reticent. Buyers are claiming to have been named figures below cuts already made public. The disposition generally is to wait developments.

Coke.—The market continues without feature with spot coke weak, but unchanged. There is little interest in contracts. Prices remain within the same range as given a week ago. The following quotations represent the range in the leading producing districts. The top figures are for long time contracts and the inside prices are for prompt shipment.

	PER TON.
Wise county furnace coke	$1.75 to 1.90
Wise county foundry coke	2.10 to 2.30
Pocahontas furnace coke	1.75 to 2.00
Pocahontas foundry coke	2.00 to 2.25
Standard Connellsvills furnace coke	1.50 to 2.00
Standard Connellsville foundry coke	1.90 to 2.50

Old Material.—The market rules easy and dull. There is not much business going on which to test prices. Some heavy melting steel was bought at $13 this week. Quotations are generally lower, but the market is unsettled and hard to locate. We quote:

Old No. 1 R. R. wrought, net tons	$13.50 to 14.00
No. 1 machinery, net tons	13.00 to 13.50
Old iron rails, gross tons	16.50 to 17.50
Old steel rails (re-rolling) gross tons	14.50 to 15.50
Old short lengths, gross tons	14.00 to 15.00
Old iron axles, net tons	17.00 to 18.00
Heavy melting scrap, gross tons	13.00 to 13.50
Stove plate, net tons	10.00 to 10.50
Heavy turnings	8.00 to 8.50
Cast borings, net tons	5.00 to 6.00
Car wheels, gross tons	14.50 to 15.00

The plant of the Franklin Rolling Mill & Foundry Co., Franklin, Pa., has been sold by the receiver, E. E. Hughes, to Chicago capitalists for $64,000. Announcement is made that a scheme of re-organization will be undertaken.

PHILADELPHIA.

Pig Iron Stocks Reduced—Uncertainty as to Finished Products.

Feb. 22.

Pig Iron.—The satisfactory manner in which shipments on contracts have been received by consumers during the past month is shown by the statistics of the eastern association, which met last week. With over 60 per cent of the merchant furnaces (number, not capacity) in this district operating, there was an actual reduction of stocks during the month, bringing the tonnage on furnace yards of most interests down to a point where constant maneuvering is necessary to meet the requirements of melters. As was to be expected from the fact that the month under review experienced no buying movement of importance, the aggregate of orders on hand is understood to have been slightly reduced. There is no disposition to blow in additional capacity, and in this direction the situation is strong. It is complicated, however, by the developments of the week in the steel trade, and by a scattering of lower quotations. Inasmuch as the prices now ruling on steel-making irons are but a shade above cost, furnace men contend that the steel reductions will not force similar reductions in iron prices, but that furnaces will be blown out rather than sell at a loss. Pipe makers are in the market for some fair tonnages of forge iron, and some moderate sales are noted, including one lot of 1,000 tons. The current level is $15.50 to $16. One malleable interest has taken on a small tonnage recently. There is no activity in basic or in low phosphorus iron. Foundry is selling in small lots at $16.75 to $17.25, delivered. We quote, delivery at eastern Pennsylvania plants over the remainder of the first half, as follows:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16.50 to 17.25
No. 2 plain	16.00 to 16.50
Standard gray forge	15.50 to 16.00
Basic	16.50 to 17.00
Low phosphorus	21.50 to 21.75
No. 2 Birmingham	17.75 to 18.25
No. 2X Virginia	17.00 to 17.50
No. 2 plain Virginia	16.50 to 17.00

Finished Materials.—So far as orders placed during the week are concerned, there is little to report, as the unsettled condition naturally reduced buying to the minimum. No decision has been announced on the steel for the Union League addition or the Baltimore tobacco warehouse, and the Curtis building is not yet ready for figuring. Of the Pennsylvania car order, the Middletown Car Works secured 200, the Cambria Steel Co. 1,214, and the American Car & Foundry Co., 1,000.

The declaration of an open market, coming suddenly and unexpectedly, has had the immediate effect of rendering the situation even more chaotic, and little has been established in regard to just what the new price level is to be. In the opinion of some of the more important factors in the trade, no increase in business is expected for the present. Efforts will be made to maintain the general price level as near the old as possible, a $4 reduction in shapes and plates and a $3 reduction on bars being the figures talked of by one large interest. It will be several days, however, until the level becomes well established. Rails remain as heretofore. We quote: Structural shapes, 1.45c to 1.60c; plates, 1.45c to 1.50c; steel bars, 1.40c; refined bar iron, 1.40c to 1.45c.

Old Materials.—The market shows another sharp decline in almost every item in the list, wrought pipe being the only important exception. Heavy steel is down to about a $15 level, with no large tonnage moving. The scrap trade hopes for some improvement, figuring that as the price of this material has been fluctuating in accordance with economic laws, any increase in business resulting from the developments in the finished steel trade must mean a bettering of old material prices. We quote, gross tons, delivered at eastern Pennsylvania plants, as follows:

Old steel rails (re-rolling)	$16.50 to 17.00
No. 1 steel scrap	15.00 to 15.50
Old steel axles	19.00 to 20.00
Old iron axles	21.50 to 22.50
Old iron rails	18.50 to 19.00
Old car wheels	15.50 to 16.60
Choice scrap R. R. No. 1 wrought	16.50 to 17.00
No. 1 yard scrap	14.50 to 15.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	18.50 to 19.00
Wrought iron pipe	14.50 to 15.00
No. 1 forge fire scrap	13.50 to 14.00
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	11.50 to 12.00
Axle turnings, heavy	12.00 to 13.00
Cast borings	10.50 to 11.00
Stove plates	12.50 to 13.00

NEW YORK.

Conditions Not Yet Readjusted—Very Few Sales are Reported.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Feb. 23.

Pig Iron.—As a result of the week's developments in the steel trade, pig iron interests look for eventual benefit, though for the present the effect is to put an end to what little activity was current. Prior to the Gary announcement on Friday, the pig iron market in this district had received a larger volume of inquiry than for several weeks past. Probably close to 50,000 tons was under negotiation, but until something definite is known as to the steel outlook, very little, if any, of this will be placed. The inquiry came principally from the north and included both foundry and malleable iron. Furnace men insist that there can be no reduction in pig iron prices, in keeping with that in steel, as production costs are practically up to the current selling figure and there is no chance to reduce them. If, as expected, a considerable buying movement in steel develops, the iron trade expects to benefit thereby. The Corporation is operating on the same percentage as last reported, but plans to begin making basic at one of its South Sharon furnaces, which have been idle for a long period. Selling is so light that quotations on first half delivery at New York tidewater, as follows, are largely nominal:

Northern foundry No. 1	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.00 to 16.50
No. 2 southern foundry	16.75 to 17.25
Malleable	17.25 to 17.75
Basic	16.75 to 17.25
Gray forge	16.00 to 16.50

Ferro-Alloys.—Except for a 100-ton sale of ferro-manganese, on which the current level is $42 to $43, seaboard and the market is quiet and without feature. Inquiry is current for 100 to 200 tons of 50 per cent ferro-silicon, which is selling at $61 to $61.50, Pittsburg.

Finished Materials.—The steel trade has not yet established itself definitely on the new price level, and the situation so far is thoroughly chaotic. The formal statement declaring the market open was not given out until Friday. Saturday being only a half day and Monday a holiday, there was no real opportunity until Tuesday of finding out in just what shape the market had resolved itself. Most of the independent steel interests withdrew from the market Friday afternoon and were making quotations late Tuesday with considerable reserve. Conferences were numerous Tuesday and the situation became less complex before the day was over. It seemed pretty well established that the level on shapes and plates was about 1.30c Pittsburg, with bars 1.20c, making them for New York delivery 1.46c and 1.36c respectively. No quotations were reported on either billets or light rails. It was assumed that standard sections would remain unchanged.

So far as structural business is concerned, the market is dead. A number of important projects pending at the time the announcement was made will all be either formally refigured or awarded on the basis of allowances

from the figures submitted. A great deal of confusion is resulting in connection with contracts already on hand, and information is sought as to what policy will be pursued by manufacturers in this direction. It is too early to state what will be the effect of the declaration in stimulating new business. So far, very little has developed and that has been chiefly with the idea of feeling out the price level. We quote as follows:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.46c; beams, 3 to 15 inches, 1.46c; tees, 3 x ¼-inch and heavier, 1.51c; plates, carloads, tanks, 1.46c; marine boilers, 1.86c; bar iron, 1.45c to 1.50c; soft steel bars, 1.36c; sheets, No. 28, black, 2.56c.

Cast Iron Pipe.—It is understood that the Philadelphia requirements for its high pressure fire system, some 8,000 tons, will be furnished by the Central Foundry Co., which has secured this order from a general contract. R. D. Wood & Co. secured the Bar Harbor letting, about 400 tons, at $23, delivered. Newark, N. J., has a letting Feb. 25 on about 2,000 tons of 6 to 24-inch and Schenectady also has a small letting in the near future. No award has been made at Hartford.

Old Materials.—The situation is so quiet and current business so light that it is difficult to give accurate quotations, those following being largely nominal. The consensus of opinion seems to be that the cut in steel will have the effect of cheapening scrap or of continuing the present low level longer than it would have held otherwise. Offerings as low as $13 delivered for heavy steel scrap are heard, but none is being secured at this figure. We quote, gross tons, New York delivery, as follows:

Old steel rails (re-rolling)	$13.50 to 14.50
Relaying rails	21.50 to 22.00
Old car wheels	14.00 to 14.50
Old iron car axles	17.50 to 18.00
Old steel car axles	17.00 to 17.50
Heavy melting steel	12.50 to 13.00
No. 1 railroad wrought	15.00 to 15.50
Iron track scrap	13.00 to 14.00
Wrought pipe	12.00 to 12.50
Cast borings	8.00 to 8.50
Wrought turnings	8.50 to 9.00
Heavy cast scrap	13.50 to 14.00
Railroad malleable	12.50 to 13.00
Stove plate	10.00 to 10.50
Grate bars	10.50 to 11.00

BUFFALO.

Lackawanna Steel Co. Makes Buffalo a Basing Point.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Feb. 23.

Pig Iron.—Demand for pig continues dull with selling mostly of small lots and not many closings for even small tonnage. Inquiries are rather indifferent this week. The break in the finished product prices has not affected the pig market perceptibly, and there is a general feeling that the furnace business will have a better tone before many weeks have elapsed. However, the depression, or dull period, clouding the market in this territory of late, has made it advisable to change the schedule of prices. The prices given below should not be considered definite quotations, as the conditions of the business this week make definite figures impossible. Prices given are generalized only and it could not be learned that these were being undersold this week. We quote f. o. b. Buffalo as follows, being 50 cents less than we gave last week, excepting charcoal, unchanged:

No. 1X foundry	$16.25 to 16.75
No. 2X foundry	15.75 to 16.25
No. 2 plain	15.25 to 15.75
No. 3	15.00 to 15.50
Malleable Bessemer	16.50 to 17.00
Gray forge	14.75 to 15.25
Charcoal	20.50 to 21.00

Finished Products.—The tension in the finished material line is decidedly marked in this territory owing to the break in steel prices and the most notable event of the week was the move made by the Lackawanna Steel Co., in shifting its basing point from Pittsburg to Buffalo. This change in basing went into effect last Thursday and naturally caused some concern in the field. There is little closing in finished material and some good business has been held up temporarily owing to the varying quotations. So far as could be learned today, the quotations made on bars had not fallen below 1.20c f. o. b. Pittsburg. Bar prices here range between 1.30c and 1.20c. In Buffalo the impression prevails that there will be a substantial amount of business in this district within the next few months.

ST. LOUIS.

Very Few Transactions in Pig Iron—Prices Somewhat Lower.

Feb. 22.

Pig Iron.—Business in pig iron in the St. Louis territory remains dull. Not many orders were placed last week except for immediate shipment. Most of the business was placed on a basis of $12.50 to $12.75, Birmingham, for No. 2, although some orders were placed as high as $13. Some of the furnaces are now openly quoting $12.50 for No. 2, Birmingham, for shipment over the first half of the present year. The inquiries here to date aggregate more than 3,000 tons for all deliveries. Our quotations are as follows:

No. 1 southern	$16.75 to 17.25
No. 2 southern	16.25 to 16.75
No. 3 southern	16.00 to 16.50
No. 4 southern	15.50 to 16.00

Coke.—The market for coke is about the same as when last reported. Connellsville best-selected 72-hour foundry coke is selling for $2 to $2.25, ovens, for prompt shipment, and at $2.25 to $2.50 for future delivery. Connellsville 48-hour furnace coke is quoted at $1.50 to $1.75, ovens. No change has taken place in the prices of Virginia and West Virginia coke. The freight to East St. Louis and St. Louis is $2.80, and $2.70 on Virginia coke when shipment is destined beyond St. Louis.

Old Material.—Our quotations on scrap iron are as follows:

Cast iron borings, free from foreign material, net tons	$ 6.00
Steel axle turnings, gross tons	12.00
Steel railroad axles, net tons	17.50 to 18.50
Iron railroad axles, net tons	19.00 to 20.00
Miscellaneous steel scrap, gross tons	12.50 to 13.00
Old car wheels, gross tons	16.00
No. 1 railroad cast scrap, net tons	12.00 to 12.50
Heavy machinery cast, net tons	13.00 to 14.00
Stove plate and light cast, net tons	11.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net tons	13.00 to 13.50
Railroad malleable, net tons	12.00 to 12.50
Heavy melting steel, net tons	13.00 to 13.50
Relaying rails, net tons	17.00 to 18.00

BIRMINGHAM, ALA.

Lower Quotations on Pig Iron—Decreased Production of Fuel.

Feb. 22.

A curtailment of production is likely to take place in the southern territory in the near future if there is no improvement in the iron market conditions. But few sales of iron have been landed of late, the aggregate being disappointing. Quotations have broken and $13 per ton, No. 2 foundry, is no more the price that is given. No. 2 foundry can be had in this section at $12.50 per ton and reports have been current already that even a lower price is accepted. The shipments of pig iron from this section continue steady, though the business is that booked before the turn of the year. There is some hope expressed that an improvement in general conditions will be noted early in March, if not before then. Some little inquiry is being received in this section. The orders that are being received are in car load lots. The Alabama Consolidated Coal & Iron Co. the past week announced the sale of 2,500 tons of Clifton iron to the American Locomotive Co. on a basis of $13.50 per ton, No. 2 foundry. It was announced by the same company that negotiations were on for a sale of 10,000 tons of iron.

The cutting of steel prices by the independent and concerns and the

United States Steel Corporation the past week brought out much discussion in this section. J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co. in a little interview stated that as far as he knew there had been no consultation between the executive committee of the United States Steel and some of the independent concerns, surely none with him.

There has been a decided curtailment in the production of coal, coke, ore and limestone. Some of the larger iron companies have large quantities of ore and stacked up, however.

BRITISH IRON MARKET.

Pig Iron Very Dull—News From Other Countries has Effect.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., Feb. 13.

The week has been on the whole rather depressing, with further shrinkage of pig iron prices in Cleveland, where today's quotations for warrants was 48s 1½d ($11.79). Apparently the disheartening conditions just now prevailing have not destroyed faith in the future, as business was done yesterday for three months iron at 48s 10d ($11.95). Apparently the principal cause of the depression is the discouraging state of affairs in America, combined with a decrease in shipments to Germany. As a rule, the foreign demand for pig-iron improves in the spring, but of this there is no sign at present, since shipments so far this month amount to only 28,849 tons. This shows no great buoyancy, although it compares with 22,883 for a similar period last month. Cleveland warrants have this week been down below 48s ($11.76), and the stocks now amount to 162,824 tons, which shows a steady increase. It is believed that stocks in makers' hands are materially increasing, but on this there is no reliable data available. The hematite trade continues unsatisfactory in spite of a further reduction of output. It is somewhat curious that while merchants can sell at 55s 6d ($13.58) makers quote 56s ($13.70) and even 56s 6d ($13.82) on account of dear coke, materials generally, and high wages. The dullness has not affected Midland business to the same extent, mainly because makers are so well booked forward that the immediate condition of things is a matter of little moment. One firm in Derbyshire is blowing in an additional furnace.

A good deal of attention has been attracted this week by important discoveries of ores in the Barrow district. Some time ago, large and rich deposits of metal were found beneath the bottom of old, worked-out mines, and the strata met with so far in the Furness district suggest that this field will be found to possess immensely larger reserves than was commonly supposed. The discoveries are of vital importance to large smelters, who are now greatly dependent on foreign importations from Spain or Algeria, where mines to supply British deficiencies have been acquired.

METAL MARKET

ST. LOUIS.

Feb. 22.

Lead and Zinc.—Zinc ore ranged in price in the Joplin district last week from $37.50 to $35 base, and several sales were reported to have been made at $38. Lead remained at $50. Silicate was unchanged at $19. The surplus in the district increased in spite of the effort of operators to dispose of their output. It is asserted that operators who have been holding ore for a year or more will not sell now, and others are producing steadily with no intention of selling at present prices.

The St. Louis and New York quotations on spelter and pig lead remain weak. St. Louis spelter is $4.75, and pig lead $3.87½. New York spelter is $4.90, and pig lead $4.02½.

NEW YORK.

Feb. 23.

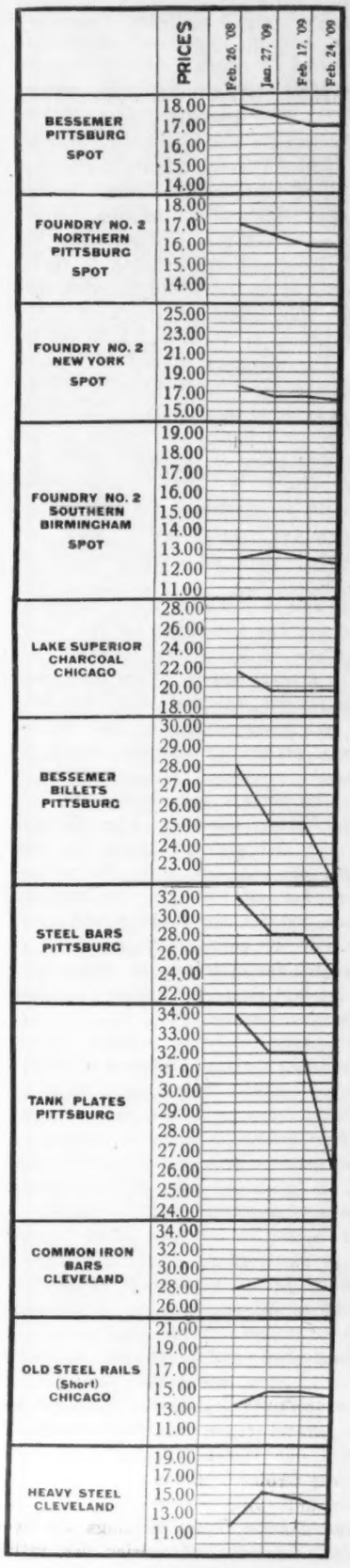
Copper.—Trading has been extremely light in spite of the steady decline in prices, and consumers on both sides of the Atlantic seem to have little interest in the market. Copper appears to be accumulating at a rapid pace and pressure to sell is increasing. Current quotations are: Lake, 13c to 13¼c; electrolytic, 12¾c to 12⅞c; casting grades, 12⅝c to 12¾c.

Pig Tin.—The market has gained strength during the week only to lose it. Business has been fair and the situation rather strong, because of the fact that supplies are well concentrated. The current level for spot metal is 28½c.

Pig Lead.—The market has been without feature and is still depressed. A few orders are being taken at 3.97½c to 4.02½c, New York.

Spelter.—The unsettled condition of the steel trade has held the spelter market quiet and there is no change

PRICE CHART.



in prices, which are 4.85c to 4.90c, New York.

Antimony.—Cookson's, 8c to 8⅛c; Hallett's, 8⅛c to 8¼c; ordinary brands, 7½c to 7¾c.

"STANDARDIZATION OF FIRE-BRICK."

A movement has been set on foot by the English Ceramic Society for a conference of representatives of the various technical institutes and societies, to consider ways and means of arranging for the grading and standardizing, as far as possible, of the refractory materials, such as fire clay, magnesite, etc., used in the construction of furnaces, kilns, ovens, etc. The movement started in January, 1908, with the English Ceramic Society, and it received an impetus by the discussion which followed the reading of Mr. Bywater's paper at the gas institute last year. Dr. J. W. Mellor communicated with the secretaries of the different institutes, and representatives were appointed to meet at Stoke-on-Trent on Jan. 4.

The title of this body was provisionally fixed as "The Committee for the Standardization of Refractory Materials."

The general opinion of the representatives present was that there was need for such a committee, and that the following preliminary scheme should be adopted:

1. To arrange and classify the various refractory materials. Clay, siliceous, as silica and ganister; special, as magnesite, chromite, etc. 2. To arrange standard specifications for the raw materials and for the manufactured products. 3. To consider the possibility of arranging for uniformity in certain stock or standard sizes. 4. Standard methods of testing, analysis, etc.

To carry out this scheme, it was agreed that the representatives of the institutes should consult with their respective fellow members, and wherever possible procure information, bearing on their specific requirements, together with data as to furnace temperatures and conditions of operation. Each section will at first conduct its own part of the inquiry independently of the others, and prepare a draft of its suggestions to be submitted to the next meeting of the general committee. These suggestions will be embodied in a provisional report to be sent back to the sections for approval or amendment and finally published as the general report. It is proposed to revise this report periodically to keep abreast of developments.

No. 3 stack of the Haselton, O., furnaces of the Republic Iron & Steel Co. was blown out Feb. 18 for relining.

DOCK BUILDING

And City Improvements in San Francisco—Large Amount of Work.

(Special correspondence.)

San Francisco, Feb. 17.—When the bids were opened at the bureau of yards and docks at Washington, D. C., for the construction of a dry dock at Pearl Harbor, Hawaiian territory, it was found that a San Francisco firm was the lowest bidder, and will most likely be awarded the contract. The Pacific Construction Co., with which the Healy-Tibbitts Co. is identified, made the lowest offer, $2,372,000, and about $200,000 less than the next lowest bidder, Edward Malley, also of San Francisco. The San Francisco Bridge Co. bid $2,900,000; McArthur Brothers, of New York, $3,400,000; McDermott Co., of Philadelphia, $3,450,000.

The dock will be 1,185 feet long, one of the largest ever constructed, with a capacity of two ships at a time. The work is to begin on it within four months. The dock is part of the general scheme for the improvement and fortification of the coast and harbors of the Hawaiian Islands.

The Union Iron Works Co. of this city has acquired the properties of the San Francisco Dry Docks Co., which has always been used for repairing ships by local firms, not by the dry dock company. John A. McGregor, president of the company, states that ship owners will have the use of the dry dock as before.

Since the second batch of the municipal bonds has been disposed of the city authorities hasten to give out the work. The board of public works, within the past few days, has approved the specifications for the pipe which is to go into the high pressure fire protection system. Bids will be received March 10 for about 43,000 tons of pipe which will cost in round numbers about $1,200,000. Bids for the construction of the five cisterns for the auxiliary fire protection system will be opened Feb. 25.

The local manufacturers, through the California Metal Trades Association, are making strenuous efforts to retain the trade and, according to statements made by officers of the association at the recent annual banquet, with considerable success. The bulk of orders for structural steel and iron still flows eastward, because owners of property, architects and contractors have still in mind the injury inflicted upon all industries in San Francisco by the strikes of 1906, and they fear a recurrence, should work again become abundant so as to make mechanics and laborers scarce. The men who invest their money and have large amounts at stake are not easily persuaded to take the risk, with the labor troubles San Francisco has endured still fresh in their memory.

Considering the vast amount of work on hand, both public and private, federal, state and municipal, semi-public service corporations, and the large structures, plans for which have been accepted, the prospects are that the current year will break all records for construction work and the amount of structural steel and iron which will enter into that work.

FAVORABLE REPORT OF WHEELING STEEL & IRON CO.

Stockholders of the Wheeling Steel & Iron Co. recently at the annual meeting re-elected the following directors: C. R. Hubbard, W. F. Stifel, George K. Wheat, W. A. Iset, Edward Hazlett, J. D. Dubois, H. H. Hornbrook, George Wise and E. W. Oglebay. The annual report was favorably received by the stockholders, for, notwithstanding the business depression of the past year, the company was enabled to pay its regular dividends and reduce its bonded indebtedness, and charge to profit and loss $100,000 for depreciation, beside contributing somewhat to its surplus. The stock of the corporation is mostly held in Wheeling, W. Va.

TO MAKE FENCING.

The Central Indiana Fence & Wire Co., Kokomo, Ind., advises that it has incorporated with a capital stock of $10,000 to manufacture square mesh woven wire farm fencing, and expects to manufacture allied products a little later. Its fence machines are being made by Walton & Macke, of Kokomo, who are stockholders and officers in the fence company. This will be all the equipment required for present needs, and no building is being done. The company proposes to buy galvanized wire for the manufacture of its fencing.

STARTS ON MARCH 1.

Announcement has been made of the starting of the plant of the Ohio Seamless Tube Co., March 1, at Shelby, O. The company is composed largely of Shelby business men, who bought the site of the Steel Corporation plant after the fire a year ago.

IMPORTANT CHANGE

In Chain Making in England—Prosperity of Tin Plate Industry.

Office of THE IRON TRADE REVIEW
Prince's Chambers, Corporation St.,
Birmingham, Eng., Feb. 6.

The chain trade of the Black country, the history of which forms the subject of an interesting report by Col. Albert Halstead, United States consul in Birmingham, issued from the Washington bureau, appears to be undergoing an important change.

Machines of German design for the manufacture of small sizes of dollied and block chain have been introduced at several of the works. Much secrecy has been observed, but it is now recognized that there is a general movement in favor of replacing as far as possible the hand-made chain by machine products. One manufacturer has exhibited a No. 4 wire gage steel chain which he declared had been made by an automatic electrical welding machine, and had stood every test. The saving in cost of production is estimated at 20 to 30 per cent. Much alarm is felt among the operatives and there is no doubt that the change will for a time at least bring about reduction of employment. German workmen are erecting the machines, but local labor will be employed in operating them.

Among the many complaints of industrial depression of which the iron industry has furnished its full share it is pleasant to find in one department of that industry a record for the past year of almost unexampled prosperity. This happy state of affairs prevails in the Welsh tinplate trade. There have been a few mills stopped at odd times for various causes, but all round 1908 has been one of the busiest years on record. The exports were scarcely inferior to those of 1907, a year of universal prosperity. The home consumption is estimated at between 200,000 and 300,000 tons. Sim & Coventry, in their annual report, on the Welsh tinplate market, say: "We have had competition both from Germany and the United States; we cannot complain of this, and there is no doubt more to follow. If, and when, the Americans come to anything like free trade, their competition with us, not only in their own but in neutral markets, will be infinitely greater than it is now. It is of the utmost importance, then, that British tinplate makers should bear this possibility in mind and should strive to prevent any alteration in our present fiscal arrangements, whereby we secure our raw materials at the lowest possible cost."

Clayton, Sons & Co., of Leeds, have obtained from the Calcutta Corporation an order for the largest water tank in the world. It is a huge steel tank for the supply of the city. The tank will have a holding capacity of 9,000,000 gallons, weighing about 40,000 tons, and it will involve the use of over 7,000 tons of steel work. The firms competing for this contract numbered 20. The lowest tender, Clayton's, was £91,367, and the highest that of Aug. Vilonne, Dortmund, £185,000.

MINING ENGINEERS MEET AT NEW HAVEN.

The ninety-sixth meeting of the American Institute of Mining Engineers is now in session at New Haven, Conn., with a fair attendance. The meeting was opened Tuesday evening, the principal feature being an address by Dr. James Douglas on the "Conservation of Natural Resources." The Wednesday morning session was given over chiefly to a discussion of "A Sea-Level Canal at Panama." In the afternoon a paper was presented by Cortlandt E. Palmer, of New York, on "Technical Education of Mining Engineers," after which an inspection was made of the Hammond laboratory and other buildings at Yale University. A number of other papers, arranged for presentation at this meeting chiefly by title, included the following: "Conservation of Natural Mineral Resources of the United States," by John Birkinbine, Philadelphia, Pa.; "The Mineral Wealth of America," by R. W. Raymond and W. R. Ingalls, New York; "The Future Supply of Iron Ore," by Henry M. Howe, New York; "The Residual Brown Iron Ores of Cuba," by C. M. Weld, New York; "Pressure Fans vs. Exhaust Fans," by Audley H. Snow, Maybeury, W. Va.; "Blast Pressure at Tuyeres and Inside the Furnace," by R. H. Sweetser, Columbus, O.; "The Limit of Fuel Economy in the Blast Furnace," by N. M. Langdon, Mancelona, Mich.; "Kentucky Fluor-Spar and Its Value to the Iron and Steel Industry," by F. Julius Fohs, Lexington, Ky. The paper by Mr. Langdon is an extremely exhaustive one. Excursions arranged in connection with the meeting embrace visits to the Farrel Foundry & Machine Works and the mills of the Coe Brass Co., Ansonia, Conn., a reception and luncheon by the Bridgeport Board of Trade and visits in that city to the locomotive works, the American Tube & Stamping Co., and the works of Crane & Co.

TELMEGAPHONE DEMONSTRATION.

The first demonstration of an interesting new invention known as the telmegaphone was made at the annual banquet of the Engineers' Society of Western Pennsylvania, held at the Rittenhouse, Pittsburg, Saturday evening, Feb. 20. By means of this instrument, a speaker hundreds of miles away was able to address those assembled and his remarks were clearly audible in all parts of the large banquet hall. W. C. Eglin, of Philadelphia, vice president of the American Institute of Electrical Engineers, voiced his own greetings to the society in this manner. A message was also received from New York. The telmegaphone is the invention of S. P. Grace and R. L. Snyder, officials of the Central District & Printing Telegraph Co., Pittsburg, and members of the society. In appearance it resembles a large telephone receiver with a diaphragm 4 inches in diameter.

The banquet of the engineers reached the high standard of good fellowship and enjoyment which are characteristic of such gatherings of the society. The banqueters numbered about 300. Dr. John A. Brashear, the noted astronomer of the University of Pittsburg, occupied in happy style the office of toastmaster. A. A. Hamerschlag, director of the Carnegie Technical Schools, spoke in favor of individual training in schools and colleges in his address "Individualism in Education." Malcolm C. Rorty, general commercial superintendent of the Bell Telephone Co., spoke on "Communication." Geo. H. Neilson, general manager of the Braeburn Steel Co., treated "Troubles of the Engineer" in a humorous vein. During the evening, President Geo. T. Barnsley, of the society, read greetings from Onward Bates, president of the American Society of Civil Engineers; John Hays Hammond, president of the American Institute of Mining Engineers; Jesse M. Smith, president of the American Society of Mechanical Engineers, and Louis A. Ferguson, president of the American Institute of Electrical Engineers.

J. R. McGinley has been elected chairman of the board of the Chicago Pneumatic Tool Co., succeeding Charles M. Schwab; W. O. Duntley was chosen president to succeed his brother, J. W. Duntley; and Charles Booth, vice president, succeeding W. O. Duntley.

Furnace A of the Maryland Steel Co.'s blast furnace has been blown out for relining and furnace B was blown in Feb. 4.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BOSTON.....73-74 Journal Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....302 Pioneer Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. Advertising Rates Furnished on Application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

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February 25, 1909.

AN ORDERLY READJUSTMENT.

The declaration of an open market on steel products, decided upon Thursday afternoon, Feb. 18, has developed a latent strength in the situation and a disposition towards conservatism and moderation on the part of the factors in the trade which have surprised even the more sanguine. The finding of a new level for prices has proceeded in a most dignified manner and the new prices as discovered prove to be not as low as would generally have been anticipated.

So much was said during the period of 15 months in which the price maintenance policy was pursued about the dangers of trade wars, ruinous competition, and the like, that the inference may have been prompted that they comprised the only alternative to the maintenance of prices along the lines prosecuted for so long a time. Such might have been the case at one time, but it is not so now. That 15-month campaign has passed into history, but its impress remains, and the impress is without qualification a favorable one. Campaigns to maintain or advance prices do not usually have such results. There have been the pools for the maintenance of which competition has been subsidized, manufacturers of equipment have been bought off and a long train of abuses created, with rapidly advancing prices to carry the constantly increasing load, while when disruption occurred the trade had to face an absolutely unwieldy capacity. Then there have been gentlemen's agreements, which generally proved that the name was a misnomer or that the parties were not gentlemen, and these affairs left a host of scores to be settled. With these and other methods of maintaining or advancing prices, few manufacturing industries are unfamiliar. In practically every instance, the second state of the trade was worse than the first.

The recent movement was absolutely distinct from all these in its methods, and while it is very early to generalize, the events of the past five days have done much to show that it is likewise absolutely distinct in its sequel. While other trade arrangements looked to results, measured their force by what they could show on the surface, putting a premium upon that which individuals hoped they could conceal, Judge Gary's campaign looked only to motives, to that which would actuate men, rather than to the acts themselves. When the sole object of an arrangement is to control results, if the results are lost, all is lost, and if in the temporary attainment of results unsafe methods are employed, the evil fruits of those improper methods remain. When the prime feature is to create or instill certain motives, those motives may remain even though conditions do not permit them to continue to lead to the same results.

It has been made evident by but a few days' experience that much of the spirit of co-operation in the steel trade has remained even though some of the original fruits are lost. There are those who looked for one of the famous trade wars the moment the word was given to withdraw from the chalk mark, but no such result has followed. The trade wars of the past are well remembered. They generally started through some particularly attractive tonnages hanging over the market, which tempted special concessions for the purpose of landing particular plums. Such conditions have been altogether lacking in this situation, for the one or two large tonnages which might be dislodged are too distinct to provoke a general market movement.

That in the long run a large increase in tonnage production is certain as a result of the train of events set in motion by last Thursday's action cannot be doubted. It is too early to expect active booking at present; there are adjustments to be made, much easier now than if order books were full, but still requiring time. In the long run, a large tonnage must result. The profits of producers may be reduced, but against lower selling prices there will be economies in production, partly through wage reductions which are the legitimate consequence not simply of the conditions now being established, but of the conditions brought about more than a year ago.

To cognate industries the results of increased tonnage cannot but be favorable. Our exports of machinery and other manufactures of iron and steel will be stimulated. In pig iron, which went through a complete course of liquidation and readjustment last fall, the result will necessarily be good. The spread between the raw material and the finished product of the blast furnace industry should necessarily be increased by the increased tonnage promised in the whole industry. When more rolled steel is consumed, more iron castings are called for, and more of the metals tin, spelter, lead and copper, so that an increased tonnage of steel products should lead to greater activity in other industries which in their turn should react favorably upon steel.

FAVORS FREE TRADE.

Editor THE IRON TRADE REVIEW:

Remembering that a few weeks ago you criticised Mr. Carnegie for saying that iron and steel should be put upon the free list, I would like to say that I am heartily in favor of

Mr. Carnegie's ideas in regard to tariff revision, notwithstanding he was a prime mover and principal beneficiary in the formation of one of the greatest and most objectionable trusts that has been formed in this country. I am unable to see that there is any benefit to the people of this country in exporting over a million tons of steel during the past year, at a price very much lower than they would sell to their customers in this country. In pursuing this policy they are exhausting the best ores of this country largely for the benefit of foreigners. Foreign consumers get their steel at much lower prices than our own people, and the foreign laborers who come over here and get high prices for their labor and return to Europe as soon as the works stop, are the greatest beneficiaries, except perhaps the comparatively few stockholders in the steel trust. If a reduction or abolition of the tariff would result in keeping this ore in the ground for the use of our children, and in keeping out of this country a large number of undesirable immigrants, a very great desideratum would be accomplished. I am in favor of the conservation of the resources of this country for the people of this country, rather than exploiting them for the benefit of people in whom we have no interest. I should favor, if it were possible, an export tax on petroleum. We are making a great blow about pumping all the oil out of the ground and shipping it abroad; and who gets the benefit?

E. B. WILLARD.

Ironton, O., Feb. 19.

Built Seventh Furnace.—The Union Malleable Iron Co., East Moline, Ill., has just completed its seventh melting furnace and has placed it in operation, in the meantime adding 75 to 100 employes to the payroll. Because agricultural implement manufacturers are running to a high percentage of capacity, the Malleable Iron company is also very busy supplying castings. The company advises that sales of the Herald chain, which is a specialty with it, are increasing steadily and that it is just issuing a new catalog explanatory of the merits of this product.

The Boston branch of the National Metal Trades Association has located its offices at rooms 309-10, 141 Milk street, opening the new location Feb. 20. The telephone number remains unchanged, Main 4911.

METAL TRADES WAGES IN THE EAST AND ON THE PACIFIC COAST.

Comparative statistics of wages paid in the metal trades on the Pacific coast and in the east have been prepared by the United Metal Trades Association of the Pacific Coast, Seattle. The statistics show the average wage for blacksmiths in the east to be 30.46 cents per hour as against 43.82 cents on the Pacific coast; the average number of hours worked per week in the east is 56.93 and on the coast 54. Seattle pays 39.68 cents per hour, which are the lowest wages on the coast, and San Francisco 46.43 cents, which are the highest. Boilermakers receive 32.22 cents in the east and 48.77 cents in San Francisco, the only Pacific coast city quoted.

Machinists receive 29.99 cents in the east against 39.26 cents on the Pacific coast; they work 55.24 hours per week in the east and 54 hours on the coast. Seattle wages, 36.63 cents, are the lowest, and San Francisco wages, 40.59 cents, are the highest on the coast.

Molders are paid 33.60 cents in the east and 43.33 cents on the coast; the average number of hours per week in the east are 55.28 and on the coast 54. Molders' wages on the Pacific coast are lowest at Portland, Ore., where they are 41.91 cents, and highest at San Francisco, where they are 46.93 cents an hour.

In the case of pattern makers, the average wages in the east are 32.90 cents per hour, and on the coast 48.35 cents; the hours worked per week are 55.25 in the east and 54 on the coast. Pattern makers' wages are lowest at Portland, Ore., 41.67 cents, and highest in San Francisco, where they are 56 cents.

Common labor receives 19.54 cents in the east and works 55.70 hours per week; on the coast it receives 24.42 cents and works 54 hours per week.

Comparisons of wages paid in the ship yards of Pennsylvania and California were also compiled. Ship carpenters receive 31.29 cents in Pennsylvania and 48.01 cents in California; they work 55.10 hours per week in Pennsylvania and 52.87 hours in California. The figures for joiners are as follows: Wages, in Pennsylvania, 28.69 cents; in California, 46.85 cents; hours per week, in Pennsylvania, 56; in California, 53.49. Riggers' wages are 20.36 cents in Pennsylvania and 41.20 cents in California; the respective hours per week are 56.21 and 52.13.

The statistics show that wages in the metal working and shipbuilding trades on the Pacific coast are considerably higher than in the east while the hours worked per week are less. In every case the highest wages on the Pacific coast are paid at San Francisco.

Deemer Steel Casting.—The Deemer Steel Casting Co., New Castle, Del., recently organized with $250,000 capital, has acquired the Triton cotton mills in that city, which have been idle for 15 years, and work has been begun on improvements to adapt these buildings to steel foundry purposes. The plant will probably be ready for operation in about six months. Directors of the new company have been chosen as follows: President and general manager, Selden S. Deemer; Edward T. Price, Wilmington, Del.; A. P. Witteman, W. G. Parsons and T. E. Austin, Philadelphia; J. V. R. Hunter, Reading.

The control of the Benton Harbor Malleable Foundry Co., of Benton Harbor, Mich., changed hands recently when the following directors were elected: W. H. Lutz, H. S. Gray, J. N. Klock and W. S. Robinson, all of Benton Harbor; G. S. Burtis and B. F. Simmons, Stockton, Ill. The new officers are: President, Mr. Lutz; vice president, Mr. Burtis; secretary, Mr. Gray; treasurer and manager, Mr. Klock; superintendent, Mr. Robinson. The capital stock was increased from $30,000 to $40,000, and new buildings have been added. Ira E. Burtis resigns as treasurer and manager.

Orders have been given to start the fires in one of the blast furnaces of the South Sharon works of the Carnegie Steel Co., Sharon, Pa. Unless market developments interfere with plans, it is likely that preparations will be made later in the week for the starting of six open-hearths and one of the mills. The South Sharon plant has not been in operation for almost a year.

The Debevoise-Anderson Co., 95 Liberty street, New York, has been appointed sales agent for the Semet-Solvay coke ovens at Chester, Pa. About 40 ovens are operated at this place, catering entirely to the eastern foundry trade with a product similar to that manufactured in western and northern New York.

LARGE ATTENDANCE

Expected at Convention of American Foundrymen's Association.

Foundrymen and manufacturers of foundry supplies and equipment are already manifesting considerable interest in the convention which will be held in Cincinnati the week of May 17-22, and owing to the central location of the city it is estimated that the attendance will exceed that of any other meeting.

The Cincinnati foundrymen have organized and are making preparations for the reception and entertainment of the visitors. It has been practically decided to hold a general reception, probably at the Hotel Sinton, on Tuesday evening, which will be known as "get together night." On Thursday afternoon and evening a boat ride on the Ohio river has been planned to a Kentucky pleasure resort where a barbecue will be held.

Supply Association.

On Friday and Saturday, Feb. 5 and 6, a special meeting of the executive committee of the Foundry and Manufacturers' Supply Association was held at the Hotel Sinton, Cincinnati, for the purpose of making arrangements for the exhibit, which will be held in Music Hall. The following members were present: F. N. Perkins, president; Geo. H. Wadsworth, John Hill and E. J. Woodison, vice presidents; J. S. McCormick, treasurer; C. E. Hoyt, secretary; Geo. R. Rayner, J. S. Smith, U. E. Kanaval and E. A. Pridmore. L. L. Anthes, president of the American Foundrymen's Association, and Dr. Richard Moldenke, secretary, met with the committee, and it was decided to charge an admission fee of 25 cents for a single attendance, and season tickets will be sold at the registration desk which will entitle visitors to attendance throughout the week at a cost of $1. The free list will be entirely suspended and season tickets will be purchased by the secretary for duly accredited members of the press and the local entertainment committee. The cost of exhibit places in Music Hall will be as follows: Ground floor with booth railings, 50 cents per square foot; second floor with booth railings, 35 cents per square foot. Temporarily building, without railings, 35 cents per square foot. An extra charge of $10 will be made for all corner booths.

Power Equipment.

The buildings have been placed at the disposal of the association by the Cincinnati committee free of charge, and light will also be furnished. Individual motors must be used by exhibitors requiring power and the building is wired for direct-current 110-220 volts. An air compressor will be installed for those requiring compressed air. All signs will be 18 inches high and will be placed uniformly in all booths. The executive committee decided to create a surplus of $1,500, but all earnings in excess of that amount will be divided pro rata among space users after the convention.

Considerable space has already been sold by the secretary, and the indications are that the number of individual exhibits will far exceed those at the Toronto convention. The size of the temporary building will be definitely decided after the number of exhibits to be provided for in that space is ascertained.

The registration booth will be located in Music Hall, where the meetings of the American Foundrymen's Association, American Brass Founders' Association, and Associated Foundry Foremen will be held. The Hotel Sinton has been selected as headquarters for the members of the American Foundrymen's Association and the American Brass Founders' Association, while the headquarters of the Associated Foundry Foremen will be established at the Grand hotel.

OPEN MARKET.

(Continued from first page.)

made. As an illustration, the average daily bookings of new business of subsidiary companies of the United States Steel Corporation were 8,322 tons for December, 1907, 18,349 tons for June, 1908, and 29,685 tons for December, 1908. During these months the total capacity of these companies was about 36,000 tons per day.

Until within the last 48 hours it has been the belief of many, if not most, of the leading manufacturers of iron and steel that no general reductions in prices were necessary or desirable. However, during the last two days, many of the manufacturers have been in conference for the purpose of giving to one another all the information and facts obtainable concerning actual conditions in detail. It appears that for one reason or another, including particularly the tariff agitation, many of the smaller concerns who have not been disposed to cooperate during the last year have become more or less excited and demoralized, and have been selling their products at prices below those which were generally maintained. This feeling has been somewhat extended and has influenced unreasonable cutting of prices by some of those who were opposed to changes, but felt compelled to meet conditions in order to protect their customers. As a result of these conditions, there has been a material decrease in new business during the last month, for the reason, as stated by consumers, that they proposed to wait until after they were satisfied bottom prices had been reached.

In view of the circumstances stated, and the further fact that the stocks on hand at the time the panic occurred have been disposed of and the contracts in force at that time have been completed or taken care of so that the necessities for the maintenance of prices which formerly existed have been modified, the leading manufacturers of iron and steel have determined to protect their customers, and, for the present at least, sell at such modified prices as may be necessary with respect to different commodities in order to retain their fair share of the business. The prices which may be determined upon and the details concerning the same, will be given by the manufacturers to their customers direct, as occasion may require.

The friendly relations which have existed between the principal manufacturers will continue and the intercourse between them for the purpose of giving and receiving information and the expression of opinions concerning trade conditions will not be abandoned.

These directors were elected at the recent annual meeting of the Wilkinson Turbine Co., Birmingham, Ala.: Joseph Wilkinson, Fred M. Jackson, R. A. White, P. C. Ratliffe, George T. Stafford, T. H. Johnson, J. W. Dewberry, E. S. Moore, R. A. Clayton, George C. Oliver, J. D. Kirkpatrick, Rufus N. Rhodes, A. P. Dewberry, Lewis Minor, R. D. Johnston Jr., J. M. Dewberry and E. F. Enslen. The directors chose these officers: Chairman of the board, Fred M. Jackson; president, James Wilkinson; vice president, J. M. Johnston Jr., who, together with Lewis Minor, were elected an executive committee.

Schedule of Supplies No. 823, hardware and tools, bureau of construction and repair of the United States navy, contained requests for bids on 12 dozen "Use-Em-Up" drill sockets. These sockets are similar to the standard taper socket with the exception of a flat on the inside, and are designed to use up taper shank drills having the tangs twisted off or the shank broken. They are now in use by the United States government in 27 different places, as well as in six placed by the government of Canada and two placed by the Mexican government. They are manufactured and sold by the American Specialty Co., Chicago.

Work will be started shortly on extensive improvements to the stack of the Stewart Iron Co., Sharon, Pa., which will include an ore bridge, bins for ore, coke and limestone, and an unloading device, all of which machinery will be operated by electric power.

MACHINE TOOLS

Exhibited at Opening of Marshall & Huschart Demonstrating Room.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Feb. 23.

An occasion of great interest and profit was provided for those interested in the latest type of machine tools on Saturday night, Feb. 20, by the Marshall & Huschart Machinery Co., which formally opened at that time its new machine tool demonstrating room. The regular meeting of the Superintendents' and Foremen's Club of the National Metal Trades Association of Chicago was held in conjunction with the opening, resulting in an attendance of more than 150 of those especially interested. The meeting was addressed by S. R. Rock, of the Rockford Drilling Machine Co., E. P. Bullard Jr., of the Bullard Machine Tool Co.; J. Wallace Carroll of the Lodge & Shipley Machine Tool Co., and Chas. Gingrist, of the Cincinnati Milling Machine Co. Mr. Rock spoke of the development of the gang drill in order to increase the efficiency of labor and in connection with gang drills the development of jigs, the automatic operation of the spindle and the proper order of operations by which the greatest efficiency of the tool has been brought out. Among the machines exhibited was one of the Rockford gang drills. Mr. Bullard spoke concerning the design of his company's vertical turret lathe, which was on exhibition, and Mr. Carroll took occasion to point out from the tool exhibited the features of their high speed lathe. Mr. Gingrist presented a very interesting discussion of the objective points in the design of milling machines.

Following the talks the various machines which happened to be in the demonstrating room were operated and the features of each displayed. The tools shown included the new Rockford shaper built by the Rockford Machine Tool Co., Barnes drill and a Rockford gang drill, Bullard vertical turret lathe, Bickford improved radial drill, a heavy pattern upright drill manufactured by the Cincinnati Machine Tool Co., and Allen high speed ball bearing drill, a Gould & Eberhardt extension base shaper, a patent head screw cutting engine lathe, a No. 3 Cincinnati high power miller and an Economy engine lathe. The demonstrating room is located on the second floor above the display rooms of the store. It has a floor space of approximately 2,500 square feet. It is equipped so that tools may be driven from a line shaft or by individual motors and is splendidly lighted both for natural and artificial lighting. The conduct of a demonstration room in which the purchaser may be shown the actual results to be accomplished on the various tools in which he may be interested is an advanced step in sales methods, the advantages of which accrue to both buyer and seller. It has been comparatively recently that the cost of power and the strength of the buildings used as storerooms have permitted such an institution. The opening proved very popular and the hospitality of the hosts, which included light refreshments, was cordially enjoyed.

The cement show now in progress at the Coliseum at Chicago is a splendid exhibit of the machinery, methods and products associated in the development of the concrete and cement industries. Many forms of reinforcing systems are displayed in which various steel bar shapes and wire designs are employed. Contractors' supplies, including concrete mixers, concrete molding machines, wheelbarrows and cars are exhibited in large variety and it is surprising to discover to what extent steel in various forms is used in manufacturing these products. The resemblance of the concrete block molding machines to the molding machines commonly used in iron foundries is so striking as to suggest the opportunity for molding machine manufacturers to take up both lines. The show is well worth seeing and is being well attended.

The Road and Track Supply Association, which has formerly exhibited by drawings and models the many appliances associated with railway maintenance and engineering in conjuction with the meetings of the America Railway Engineering and Maintenance of Way Association at the Auditorium hotel, will this year conduct a separate exhibition at the Coliseum in the week of March 15 to 20. At that time the actual appliances will be exhibited.

The Hanna Engineering Works reports sales of its riveters, shakers and mold dryers to the following firms: Lima Locomotive & Machine Co., Lima, O.; International Harvester Co., Plana Works, West Pullman, Ill.; Rathbone Molding Machine Co., Detroit, Mich.; Four Pit Malleable Iron Co., McKees Rocks, Pa.; Ottawa Silica Co., Ottawa, Ill. Reliance Boiler Works, Milwaukee, Wis., which adopted the Hanna type of riveter over the plain toggle type, of which it already has one in use. Crown Iron Works, Minneapolis; South Halstead St. Iron Works, Chicago; Silver Bros. Iron Works Co., Salt Lake City; A. Steen en Cta, Madrid, Spain (2); Stone City Steel Construction Co., Bedford, Ind.; F. O. Browne, Denver; Chicago & Northwestern Railway Co., Chicago; McClintic-Marshall Construction Co., Rankin, Pa.; Jones & Laughlin Steel Co., Pittsburg; Noelke-Richards Iron Works, Indianapolis; New England Bolt & Steel Co., Boston; Stephens-Adamson Mfg. Co., Aurora, Ill.; Pusey & Jones Co., Wilmington, Del.; Worden-Allen Co., Milwaukee., and two 102-inch, 80-ton machines for Cambria Steel Co.

The recently incorporated Cincinnati Bickford Tool Co., of Cincinnati, held its organization meeting on Feb. 20, and the following officers were elected: August H. Tuechter, president; Sherman C. Shauer, vice president and general manager; W. H. Shafer, secretary; George P. Gradolf, treasurer; H. M. Norris, engineer. The new company represents the consolidation of the Cincinnati Machine Tool Co. and the Bickford Drill & Tool Co., through the purchase of the Bickford company by the Cincinnati Machine Tool Co. Mr. Gradolf and Mr. Norris have for a long time been connected with the Bickford Drill & Tool Co. Mr. Tuechter and Mr. Shauer organized and controlled the Cincinnati Machine Tool Co.

The Dodge Corrugated Iron Co., Sioux City, Ia., manufacturer of corrugated metal culverts, etc., advises that it has leased property at 420-422 Court street, and will do no building for the present year. Almost all machinery used is of special make and designed and built under the company's supervision. It will manufacture the Watson patented corrugated iron culvert and the Kirkpatrick patented trap door sewer and tile outlet, used extensively in the west. It will also build steel grain bins, silos, etc., and do a jobbing business in sheeting and roofing.

The Brookside Brass Foundry & Mfg. Co., Cleveland, manufacturer of high grade plumbing goods, advises that its increase of capital stock recently noted is to cover the purchase of new machinery and also provide for a probable addition to its factory which it intends to erect the coming spring.

NEW DEPARTURE

May be Taken by Employers' Association of Cleveland.

The Employers' Association of Cleveland held the largest annual meeting in its history at the Hollenden, Feb. 18. Over 200 employers of Cleveland and its vicinity were present. President L. H. Kittredge, who is also president of the Peerless Motor Car Co., presided. Several new departures were recommended by Secretary Philip Frankel in his annual report, which will be considered by the new general board at its next meeting. The general board for the coming year includes William V. Martin, C. P. Leiniger, William G. Hoffman, W. D. Sayle, L. H. Kittredge, W. B. Greene, C. O. Bassett, Sol Salberg, C. T. Williams, Joseph H. Glauber, W. B. McAllister, Frank H. Clark, T. W. Hill, John A. Penton, George F. Thesmacher, W. L. Blau, O. M. Stafford, Richard Feiss, W. B. Fish and J. W. Conger.

In reviewing the principles of the Employers' Association, Secretary Frankel enumerated them as follows: No closed shop, no restriction as to the use of tools, machinery or materials, except such as unsafe; no limitation of output; no restriction in number of apprentices and helpers, if of proper age; the abolition of the boycott and sympathetic strike; no compulsory use of the union label or sacrifice of the independent working man to the labor union.

He recommended that a permanent legal department be established, and that a free labor employment bureau, open to both men and women, union and non-union, be established on a down town street, and that a monthly publication in magazine form be issued for the dissemination of accurate information to both employers and employes. Because of the success which has attended the efforts of the Employers' Association the past year, pressure is being brought to bear upon President Kittredge to accept re-election for another term.

The Crocker-Wheeler Co., Ampere, N. J., has closed a contract to equip with modern drives the new woodworking factory of the John Hofman Co., Rochester, N. Y. The order includes 40 induction motors, ranging from 1 to 30 horsepower, with a total capacity of 200 horsepower, each motor to be used for individual drive and each with one exception being of the squirrel cage type. The generator and three lighting transformers are also included in the order placed with the Crocker-Wheeler company.

PERSONALS.

Walter L. Clark, vice president of the Niles-Bement-Pond Co., is in Europe.

P. G. March, president of the Cincinnati Shaper Co., has sailed for a three months' trip to Europe.

C. W. Courtney, of the Courtney Engineering Co., Cleveland, has returned from a business trip to Jamaica.

F. N. Hoffstot, president of the Pressed Steel Car Co., sailed for Europe immediately after the annual meeting of the company.

F. H. Rose, assistant treasurer of the Upson Nut Co., will return this week from a pleasure trip to Jamaica and Florida of two weeks.

Archibald Johnson, vice president of the Bethlehem Steel Co., sailed last week for Europe to join President Schwab, who went over shortly before.

A. B. Neumann, who resigned Feb. 1 as chief engineer of the Gary plant of the Indiana Steel Co., is temporarily located at 1539 First National Bank building, Chicago, pending the arrangement of his plans for the future.

Colonel H. P. Bope, first vice president of the Carnegie Steel Co., responded to the toast "George Washington" at the banquet held by group eight of the Pennsylvania Bankers' Association at the Hotel Schenley, Pittsburg, Feb. 22.

Henry S. Haskins has been elected president of the Columbus & Hocking Coal & Iron Co., succeeding the late L. C. Lathrop. Henry S. Leverich takes Mr. Lathrop's place on the directory board. Both are members of the New York brokerage firm of Lathrop, Haskins & Co.

OBITUARIES.

George C. Belcher, aged 64 years, superintendent of the Arcade Malleable Iron Works, Worcester, Mass., died Feb. 9.

A. H. Patch, inventor and manufacturer, died Jan. 29, at Clarksville, Tenn., aged 84 years. He was born in Hamilton, Mass., and removed to Louisville, Ky., in 1856 and settled in Clarksville in 1875. He first embarked in the manufacture of important patents and his manufacturing interests grew to large proportions.

John Starr, head of the electrical engineering and contracting firm of John Starr Son & Co., Ltd., Halifax, N. S., died Feb. 15, aged 80 years. The firm founded in 1883 is the oldest established electrical supply house in Canada. Mr. Starr introduced the American system of arc lighting into Halifax and other lower province cities, and spent several years in London and Paris establishing systems of electric street lighting.

Thomas P. Grasty, vice president of the Manufacturers' Record Publishing Co., Baltimore, and a widely known writer on southern industrial and commercial topics, died Feb. 16, while on a business trip at Talladega, Ala. Death was caused by peritonitis. Mr. Grasty had been connected with the *Manufacturers' Record* for 20 years, serving as a staff corespondent. He was born in Yanceville, N. C., 56 years ago. In early life he removed with his father to Missouri, where he became identified with the leading western newspapers. Twenty-five years ago he became editor of the *Planters' Journal*, published in Mississippi, and 20 years ago he accepted the position of staff writer for the *Manufacturers' Record*. In all these years, Mr. Grasty continued to lay before the public the mineral possibilities of the south, and himself invested his resources in Alabama mineral lands.

At the annual meeting of the Michigan Stove Co., Detroit, these officers were re-elected: President, Jeremiah Dwyer; vice president and general manager, George H. Barbour; second vice president and secretary, Charles Ducharme; treasurer, Merrill B. Mills; assistant treasurer, Edwin D. Barbour. These new members were added to the directorate: H. G. Gillespie, L. E. Young, E. J. Dwyer and C. A. Ducharme.

A petition for dissolution was granted by the court at Lebanon, Pa., to the Lebanon Valley Iron Co. The furnace formerly operated by the company is now in possession of the Edgewater Iron Co., of which General E. Burd Grubb is president and Lowden W. Richards superintendent.

The Cleveland branch of the National Metal Trades Association will hold its annual meeting March 4 in the Colonial Hotel. Reports will be received and officers elected.

The eleventh annual convention of the National Metal Trades Association will be held at the Hotel Astor, New York city, April 14-15.

The annual meeting of the shareholders of the Sloss-Sheffield Steel & Iron Co. will be held March 10.

No. 4 stack of the Illinois Steel Co. was lighted Feb. 12.

AMONG MACHINERY MAKERS.

CINCINNATI.

Machine Tool Business Very Quiet—Foundry Trade Dull.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Feb. 23.

The record of the past week is not so generally favorable as for the past two weeks. Orders have been light and the manufacturers' courage is only stimulated by the amount of inquiry coming in. The few orders received still call for prompt delivery and the plants are continuing their policy of being prepared to furnish stock sizes at once and making up special sizes with all possible dispatch. The foundry trade continues dull, as our local foundries depend largely upon the machine tool manufacturers for orders for castings; to some extent the foundries, however, since the depression, have sought orders in other markets and in a few instances have been able to secure enough outside business to keep them running fairly well. Referring again to the machine tool trade, reports are at times so irregular that it is difficult to judge of the general situation. A group of manufacturers, all making different lines, will have poor business for one or two weeks, while another group will have a good run of orders; and in the next week or two the situation may be reversed. The fact remains, however, that the average shows gradual improvement, but the volume of business is far below a satisfactory basis in the larger shops. Some of the smaller shops, which do not require many orders to run them to capacity, are more nearly satisfied as a general proposition than the larger manufacturer. The machine tool trade continues hoping that railroad buying may be resumed and that the tariff question may be settled as speedily as possible, as these two factors are regarded as the important features in prolonging the present depression.

An interesting visitor to this city, Fred W. Taylor, of Philadelphia, former president of the American Society of Mechanical Engineers, was entertained by the machine tool men this week and on Tuesday evening addressed about 200 shop foremen and superintendents of the metal working establishments at the Business Men's Club. In his talk to the shop men, he devoted himself to technical subjects, such as the speeding of machines and scientific and accurate handling of machines and workmen to secure best results. He advocated the task system as against the incentive method now so general. Mr. Taylor was entertained at luncheon by Si P. Egan, of the J. A. Fay & Egan Co.; E. M. Chase, of the Cincinnati Milling Machine Co.; B. B. Quillan, of the Cincinnati Planer Co.; Murray Shipley and Lewis Webber, of the Lodge & Shipley Machine Tool Co.; John W. Neal, of the McGowan Pump Co.; O. H. Broxterman, of the John Steptoe Shaper Co.; J. C. Hobart, of the Triumph Electric Co.; E. H. Hargrave, of the Cincinnati Tool Co.; F. E. and J. A. Le Blond, of the R. K. LeBlond Machine Tool Co.; Henry Ritter, of the Lunkenheimer Co.; E. F. DuBrul, of the Miller, DuBrul, Peters Co., and Prof. Schneider, of the Cincinnati University.

The Cincinnati Iron & Steel Co. has sold the past week to the Cincinnati Traction Co. a 30-ton crane for use in its car-building shops at Chester Park.

BUFFALO.

Better Outlook for Machinery—Some of the Recent Orders.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Feb. 23.

The machinery market at this time makes a better showing than several other lines and some requests have come in for figures indicating large business ahead. One concern reported that the business done this month was double that of January, and other interests made favorable reports and appear satisfied with the general outlook. The biggest closing of late is the order given by the Washburn-Crosby Milling Co. to the Allis-Chalmers Co., for machinery and equipment said to have a value of $200,000. Aside from the milling machinery, the contract calls for an 1,800-kilowatt steam turbine. The use of a turbine of this character is an innovation so far as milling east of the Mississippi is concerned. The turbine will be built by the Allis-Chalmers Co., under the latest patents controlling Parsons turbines, a foreign invention. It is of the same type as used by the ocean liners Lusitania and Mauretania. The new equipment will give a total milling capacity of 12,000 barrels a day. Among other orders awarded Allis-Chalmers Co., is one from the Lowell Mfg. Co., of Erie, Pa., for one 500-kilowatt, alternating-current generator and Reynolds Corliss engine, exciter and switchboard; also an order from Empire Electric Co., Franklinville, N. Y., for a 350-kilowatt generator for electric lighting plant.

Included among closings made by the Westinghouse Electric & Mfg. Co., recently, were the following orders: One 100-horsepower Westinghouse motor and 350-kilowatt transformer for Dold Packing Co.; one 500-kilowatt generator direct connected to an 850-horsepower Westinghouse gas engine for Warren & Jamestown Electric Railway; two generators, engine type, 50-kilowatt, for Warren, Pa., state hospital; one 50-kilowatt generator for Thomas Indian school, Iroquois, N. Y.; 1,000-horsepower generator for American Plate Glass Co., of Kane, Pa., also gas engine and 650-kilowatt alternating-current generator; one 3,000-horsepower, 60,000-volt transformer for Buffalo, Lockport & Rochester Ry.; one 1,200-horsepower alternating-current motor for the Seneca Iron & Steel Co.

The York Mfg. Co., of York, Pa., was given an order by the Webster-Citizens Ice Co., for two 100-ton ice machines.

MILWAUKEE.

Wisconsin Engineers Will Organize—Some New Construction.

Milwaukee, Wis., Feb. 22.—Manufacturers of the state are interested in a movement which is taking place for the organization of engineers of the state, representing manufacturing plants, cities, public utilities and colleges, into a state association similar to those in existence in Illinois, Indiana and other states. The purposes of the organization will be to get the engineers of the state better acquainted with each other and to bring about a better understanding of general engineering problems. It is proposed to hold the first meeting at Madison during the latter part of February. Prof. F. E. Turneaure, dean of the college of engineering, University of Wisconsin, is chairman of the committee which has the coming meeting in charge.

The Allis-Chalmers Co., Milwaukee, and the John S. Metcalf Co., Chicago, are the only two concerns which have submitted bids for the construction of the municipal lighting plant of Milwaukee. Four bids, ranging from $125,000 to $187,000, have been filed by the Allis-Chalmers Co. The Metcalf company has put in two bids, one of $144,860 and the other $155,-

205. L. V. Rice and H. S. Bowen, consulting engineers of the R. W. Hunt & Co., of Chicago, will investigate the bids and the contract will be awarded soon. Attorneys for Thomas J. Neacy, president of the Filer & Stowell Co., Milwaukee, announce that Mr. Neacy is ready to call for an injunction to prevent the erection of the lighting plant as soon as the contract is awarded.

William H. McGillen, of Milwaukee, is the lowest bidder for the removing of one of the old piers and the construction of a new pier in the Milwaukee harbor. Mr. McGillen's bid was $101,065.50. Specifications call for the use of 8,600 pounds of wrought iron, steel drift bolts and wrought iron or wire spikes, and 49,300 pounds of wrought iron or steel screw bolts and tie rods.

Preliminary plans have been drawn for a new 3,500-foot viaduct to be erected on Western avenue, Milwaukee, at a cost of $450,000. The work of erection will not begin for several years yet.

Frederick W. Sivyer, president of the Northwestern Malleable Iron Co., of Milwaukee, accompanied by Mrs. Sivyer, has left Milwaukee for a six weeks' outing at Palm Beach, Fla.

Negotiations are under way by John C. Manning, of Milwaukee, for the establishing of a steel casting foundry at Eau Claire, Wis. The plant will be established if the necessary bonus is raised by the business men of Eau Claire.

An addition, 80 x 60 feet, is being erected at the plant of the Wausau Iron Works, at Wausau, Wis. Considerable new equipment will be added and the present capacity will be increased by one-third.

Plans are being made by John Beernink, of Milwaukee, for locating a sheet iron and metal works at Eau Claire, Wis. Mr. Beernink has purchased his stock of tools and machinery and is now looking for a location. Besides manufacturing a line of sheet metal and cornice work, the new plant will build and install heating plants and ventilating systems.

The Chicago Lighterage Co. has awarded the contract to the Manitowoc Dry Dock Co., at Manitowoc, Wis., for the construction of three lighters and one dump scow at $135,000. An increased force will now be put on in the boiler shop, machine shop and ship yards of the Manitowoc company.

A contract for installing additional electrical machinery at the Grandfather Falls plant at Merrill, Wis., has been awarded to the Western Electric Co., of Chicago, for $25,000.

A new foundry will be erected during the present year by the Stoughton Wagon Works at Stoughton, Wis., a branch of the Mandt Wagon Co., of Moline, Ill., at a cost of $100,000. Other improvements will be made at the wagon plant.

PITTSBURG.

Equipment Contracts Made by the West Penn Steel Co.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Feb. 23.

Machinery makers at present are vitally interested in the effect which the open market just declared on iron and steel products will have upon their business. The view is quite widely held that the immediate results to be noted will be a tendency on the part of prospective buyers to hold back their contracts until conditions in the iron and steel market are more clearly defined. Eventually the increased buying of iron and steel which may develop from the present price situation is expected to redound to the benefit of machinery makers. Some machinery business, especially in machine tools, has been held up owing to a disinclination of makers to grant concessions, and in the new state of affairs now prevailing it will be interesting to note what will be the attitude toward such inquiries. Generally the market continues quiet.

The National Sheet Steel Co., Mansfield, O., this week completed the furnace work upon its new plant, and it is expected that operations will be inaugurated by March 1. The company has considerable business on its books and starts under favorable circumstances. Volkommer & Hagan, Pittsburg, have been the engineers in charge of the furnace construction.

The Center Valley Light & Power Co., of Philo, O., is preparing to erect a hydro-electric power plant along the Muskingum river. The turbines to be installed are expected to develop 4,500 horsepower, which will be used in generating light and power for the district south of Zanesville. An auxiliary steam plant will also be installed. The buildings will be of brick and concrete construction, and the main power house will be 100 x 200 feet in dimensions. F. W. Wetherel, Keystone building, Pittsburg, is preparing plans for the plant.

Complete equipment awards have been made by the West Penn Steel Co. for its new steel works and finishing mills now under construction at Brackenridge, Pa. The Wheeling Mold & Foundry Co., Wheeling, will equip the 26-inch sheet plant consisting of three hot mills and two stands of cold rolls. The three-high bar mill with roll lathe and slabbing shear will be furnished by the United Engineering & Foundry Co., Pittsburg. The company itself will superintend the construction of the one 80-ton open-hearth furnace and the two soaking pits of four holes each. The crane contract has been taken by Manning, Maxwell & Moore, New York, and Shaw machines will be used. Four cranes are included, one of 20 tons with 87-foot span for the sheet mill, two of 15 tons each with 72-foot span for the bar mill, and one of five tons with 40-foot span to operate with the shear. Other auxiliary equipment awards consist of four boilers of 350 horsepower each to the Wick Boiler Co., Saginaw, Mich., and two 18 x 18-inch high speed engines to the Phoenix Iron Works, which will be direct connected to 200-kilowatt General Electric generators. The main power engines awarded to the Mesta Machine Co., Pittsburg, have already been mentioned. It is expected that the new plant will be completed and in operation by Sept. 1.

The Scott Iron & Steel Co., which is remodeling the old plant of the Carnegie Tube Co., at Carnegie, Pa., for the manufacture of steel castings and horseshoes, has taken out a Pennsylvania charter with a capital of $100,000. J. C. Stauffer, Carnegie, is treasurer, and with Mr. Stauffer, John A. Scott and Geo. P. Steel, of Pittsburg, are given as directors.

NEW YORK.

No Important Purchases and Few Sales Reported.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Feb. 23.

There have been few developments of late to feature the eastern machine tool trade, and the situation manifests little change from that prevailing at the opening of the year. No important purchases are to be discovered, and even occasional sales seem to be somewhat fewer than heretofore. There is no cutting of prices to any extent, however, except of punches, shears, hammers and other extremely heavy machines. The railroad inquiries recently circulated have not resulted in business,

so far as can be learned, and do not seem likely to in the early future. Machine tool manufacturing plants are running on about the same schedule as has prevailed for some time. Here and there, however, an exception occurs; for instance, the plant of the Motor Car Specialty Co., Trenton, N. J., is working full time and reports a rush of orders. The Sloan & Chace Mfg. Co., Newark, N. J., has recently booked special business which will probably compel the operation of a night shift. The Higley Machine Co. has found the metal saw trade so brisk of late that it has been forced to run nights at times to keep up with orders; a good part of this business is for export shipment. These instances of activity are exceptional, however, and on the whole the condition of trade is little improved.

The American Light & Traction Co., 40 Wall street, New York city, is in the market for a considerable amount of power plant equipment for installation at San Antonio, Tex. This includes boilers, condensers, generators and turbine equipment. The matter is being handled by Mr. Abel at the address given.

Another and larger power equipment proposition now before the trade is that of the Metropolitan Traction Co., for which W. J. Jones, 60 Wall street, is engineer. It is understood that this interest, which is a consolidation of several existing lines, is to install a turbine power plant at Reading, Pa., with an immediate capacity of 10,000 horsepower and an ultimate capacity of twice this size.

It is understood that considerable buying has resulted from the inquiries circulated some time ago by the Santee River Cyprus Lumber Co., Ferguson, N. C. The original inquiries called for close to $500,000 worth of equipment, including industrial cars and locomotives, saw mills, unloaders and a complete machine shop.

The Reeves Bros. Co., Alliance, O., making a specialty of steel plate and structural work, has placed H. S. Morse in charge of its recently established New York office, 141 Broadway. Heretofore, its eastern interests have been looked after by G. J. Mashek.

The trade is following with interest the announcement that a large plant for the manufacture of brake shoes, locomotive tires and other railroad appliances is to be built on a 20-acre tract on the Newark, N. J., meadows. John W. Dunn, formerly president of the International Steam Pump Co., is the moving spirit in the project.

Several new factory propositions are reported from Philadelphia, among them the large concrete laboratory for John Wyeth & Bro., Inc., manufacturing chemists. The Philadelphia Warehousing & Cold Storage Co. is shortly to erect an eight story addition to its present plant, at a cost of about $250,000.

IRON ORE BOOKLETS.

Pickands, Mather & Co., Cleveland, have issued their annual booklet giving analyses of Lake Superior iron ores which they have for sale. These ores are as follows: Old range Bessemer, Brotherton, Cary Bessemer, Cary Empire, Negaunee Bessemer, Sunday Lake, Tyrone, Windsor, Mesabi range Bessemer ores, Athens, Corsica, Crete, Elba, Minorca, Malta, Spring, Troy, Verde. Old range non-Bessemer ores, Baltic (group), Beta, Gamma, Hemlock, Hildreth, Imperial, James, Kakagon, Mikado, Nimikon, Negaunee, Pike, Walpole. Mesabi range non-Bessemer ores, Albany (group), Adriatic, Bangor, Cyprus, Euclid, Hector, Mohawk. Silicious ores, Calumet, Vivian, Waucedah.

E. N. Breitung & Co., Rockefeller building, Cleveland, dealers in Lake Superior iron ores, have issued a booklet giving expected analyses for 1909 on the following ores: Breitung No. 1, Breitung No. 2, Breitung silicious, Charlotte, Foley No. 1, Foley No. 2, Himrod, Mary, Randville, Washington No. 1, Washington No. 2, Washington lump. Breitung silicious, Randville and Himrod ores are silicious. The Foley ores are Bessemer and others non-Bessemer.

The B. M. Osbun Co., Chicago, advises that it will handle the Dayton Hydraulic Machinery Co.'s product, Dayton, O., and also in all probability that of the Frick Co., Waynesburg, Pa., Ross stokers, and the Atmospheric Condensation Co., of Kansas City, Mo. B. M. Osbun, president, was purchasing agent for Chalmers & Williams, mining machinery, for four years, and has been buying mechanical equipment for the Armour interests for two years. Mr. Ross, vice president, for years has been connected with boiler and stoker work. The secretary and treasurer, Edward Rosing, has had wide experience in the mechanical equipment of buildings.

The directors of the Eastern Steel Co. were re-elected at the annual meeting at Pottsville, Pa.

NEW SHOP COMPLETED

By Grand Trunk at Stratford, Ont.—Canadian Northern Buys Steel Rails.

Toronto, Canada, Feb. 22.—The new Grand Trunk Railway shops at Stratford, Ont., just completed, were formally opened on Feb. 18, the occasion being celebrated by a complimentary banquet tendered by the city to General Manager Hays and other officials of the company. The shops, which cost over $1,000,000, are regarded as the best equipped in Canada. They are constructed of steel and concrete throughout, operated entirely by electricity, and heated by the hot air fan system.

The claim of the Dominion Iron & Steel Co. for damages against the Dominion Coal Co. in the action recently decided in favor of the former by the British Privy Council, up to Jan. 31 amounts to $3,901,663, the principal item being $3,054,693 for extra cost of coal above the contract price of $1.24 per ton.

The Canadian Northern Railway has ordered from the Dominion Iron & Steel Co. 30,000 tons of steel rails to be delivered this year for the Western extension of the road.

Contract for Armor Plate.—The Union Trust Co., of San Francisco, has just awarded to the Bethlehem Steel Co., of South Bethlehem, Pa., the contract for an armor plate safe deposit vault, which, when erected, will be the second largest armor plate vault in this country, and exceeded only in size by the armor plate vaults recently erected in the Trinity building, New York city. The dimensions of the vault will be approximately 25 by 44 feet, and 10 feet in height, constructed entirely of armor plate, with two solid main circular entrance doors, each weighing over 25 tons. The vault will be built at the armor plate mills of the Bethlehem Steel Co., and will require one year for construction. The Union Trust Co. has just commenced work on the foundation of its future home, corner of Market street and Grant avenue, the choicest spot in the retail business district of San Francisco. The building will be an imposing structure, but will be occupied by the bank exclusively.

The Messenger & Parks Mfg. Co. is planning to erect a plant at Aurora, Ill., for the manufacture of sheet metal goods.

PANAMA CANAL COSTS.

Official Figures Showing Actual Expenditures and Work Accomplished.

The cost of construction of the Panama canal up to Oct. 1, 1908, together with other interesting data concerning the inter-oceanic waterway, have been made public in the *Canal Record*, under date of Jan. 6. The statement shows that there were excavated by the French companies 81,548,000 cubic yards, and by the Americans from May 4, 1904, to Dec. 31, 1908, a total of 59,773,179 cubic yards. Of this latter total, steam shovels excavated 37,111,790 and dredges 22,661,389 cubic yards. The rate of increase from year to year, through increased efficiency, equipment, etc., is as follows: From Jan. 1 to Dec. 31, 1905, a total of 1,799,227 cubic yards; the same period in 1906, a total of 4,948,497 cubic yards; same period in 1907, a total of 15,765,290 cubic yards, and for the same period in 1908, a total of 37,016,693 cubic yards. Of the total amount excavated by dredges, 10,839,383 cubic yards was excavated in the Atlantic division, and 11,822,006 cubic yards in the Pacific division.

The total classified expenditures from appropriations for canal construction amounted in round numbers, to Oct. 1, 1908, to $83,275,000. "Classified expenditures" do not include advances to the Panama railroad, amounting to nearly $5,000,000; the purchase of Panama railroad stock; services rendered and material sold to individuals and companies, amounting to about $2,500,000, and all material on hand not drawn from store. Of the total expenditures of $83,275,000 from May 4, 1904, to Oct. 1, 1908, the department of construction and engineering expended $51,512,000; the department of sanitation, $7,408,000; buildings for the department of construction and engineering, including quarters, $8,550,000.

The expenditures of the department of construction and engineering from May 4, 1904, to Oct. 1, 1908, are divided as follows: Work, $29,798,000; plant, $16,736,000, and general administration, $4,978,000. This department expended on dry excavation from May 4, 1904, to Oct. 1, 1908, a total of $43,285,000, in excavating 31,656,338 cubic yards, with a unit of cost of $1.37. The unit cost for the period from May 4, 1904, to July 1, 1907, was $2.22; from July 1, 1907, to July 1, 1908, $1.07, and from July 1, 1908, to Oct. 1, 1908, $0.97. On wet excavation, the expenditures from May 4, 1904, to Oct. 1, 1908, were $6,061,000, in excavating 18,849,979 cubic yards, with a unit cost of 33 cents. The unit cost for the period, May 4, 1904, to July 1, 1907, was 28 cents. From July 1, 1907, to July 1, 1908, the unit of cost was 38 cents, and from July 1 to Oct. 1, 1908, it was 22 cents. On a total for the entire period from May 4, 1904, to Oct. 1, 1908, of $49,346,000, in excavating 50,506,317 cubic yards of both wet and dry excavation at a unit cost of 98 cents.

The figures show that there has been a constant reduction in unit cost. For instance, dry excavation for the first quarter of the present year cost 63 cents per cubic yard for direct charges, 12 cents per cubic yard for general administration, making a total of 75 cents. Dredging cost 9 cents per cubic yard for direct charges and 2 cents per cubic yard for general administration. The average cost per cubic yard for excavation was 40 cents for direct charges and 8 cents for general administration, making a total of 48 cents, as against an average cost of 57 cents for these two items for the last fiscal year, a reduction of about 15 per cent.

REPORT OF UNION SWITCH & SIGNAL CO.

A large reduction in earnings during the year 1908 is shown by the annual report of the Union Switch & Signal Co., Pittsburg, for the period ending Dec. 31, 1908. The comparative earnings and surplus statements are as follows:

	1908.	1907.
By sales 12 months ending Dec. 31, 1908	$2,103,718.49	$4,993,731.00
By other income	19,824.29	29,868.00
Totals	$2,123,542.78	$5,023,599.00
To expenditures— on account of sales, interest on bonds and depreciation	$2,045,694.10	$3,998,757.00
Profit to surplus	$ 77,848.68	$ 799,598.00

The total assets of the company are given as $5,162,129, of which $2,384,293 is in cash, bills receivable and materials in store and in contracts.

The Enid Foundry & Machine Co., of which A. C. Lang is president and manager, plans to erect a plant for the manufacture of implements at a cost of $7,000, the shop to be 56 x 100 feet.

The Canada Iron Corporation, Ltd., will build a new blast furnace at Midland, Ont., and has retained as engineers for the work, Frank C. Roberts & Co., of Philadelphia.

INSPECTION OF ELECTRIC SMELTING PROCESS IN SWEDEN.

Dr. Eugene Haanel, Canadian director of mines, has returned to Ottawa from an inspection of the new electric smelting process at Dumnarfvet, Sweden. He expresses his conviction that the method is a commercial success. The furnace in which the experiments were carried on he describes as much like the blast furnace in which the tuyeres—the apparatus for introducing the blast—are replaced by electrodes. Three-phase current is employed and about 700 horsepower was delivered, though the furnace was large enough to utilize 1,500 horsepower. The furnace worked quickly and the charge passed down the shaft gradually and uniformly; the electrodes required no regulation, not being moved for five days. In addition to this plant, a steel furnace has been invented at the Dumnarfvet works, in which three-phase current and two electrodes are used, the bottom of the furnace furnishing the third electrode. The special advantage of this is that the three-phase current produces a rotation of the bath in a vertical plane, bringing new material continually into the slag line for purification.

Another outcome of Dr. Haanel's investigations in Europe is the erection of a fuel testing plant in Ottawa, for which $15,000 has been appropriated. The machinery is on its way from Germany. The principal object in view is the utilization of peat, which, by a German process can be used in a gas producer, the gas being capable of conversion into electric energy. Investigations are being made by the government to determine the extent and quality of some of the Canadian bogs and an appropriation has been made for the purchase of a peat bog by the government where machinery will be installed to demonstrate the best methods of converting the raw fuel into electric energy.

The Pitts-Thompson Foundry Co., Dubuque, Ia., was recently re-organized, L. A. Pitts retiring. The newly elected officers are: President, James W. Thompson; secretary and treasurer, F. M. Blake. The company's specialty will be the jobbing foundry business. Indications point to a good season.

An active demand for Wheeling Steel & Iron stock has developed at Wheeling, recent sales being made at 134.

CITY HALL

Will be Built at Indianapolis—New Companies Organized.

Indianapolis, Feb. 22.—The board of public works, 913 Majestic building, is receiving bids until March 8 for the general contract for the construction of a city hall building and until the same date on separate contracts for a steam heating plant, plumbing and gas fitting and electric wiring and light fixtures for the building. The building will cost approximately $600,000 and will be of brick and steel faced with Bedford stone.

Incorporation papers have been filed here for the American Steel Dredge Co., of Fort Wayne, which will manufacture dredging machinery. The capital stock is $200,000 and the incorporators James P. Karr, John D. Rauch, John C. F. Sprankle, Perry G. Randall, Hugh C. Keegan, William A. Bohn and Christian C. Schlatter. A site on the west side of the Lake Erie & Wheeling railroad tracks, west of the city, has been selected and 100 men will be employed as soon as the plant is completed.

The United Machine Co. will move from Detroit to Angola, where it will continue to manufacture refrigerating and artificial ice plants. The Angola Commercial Club has agreed to sell $50,000 worth of 7 per cent preferred stock in the company and a building 50 by 300 feet will be erected and 50 men employed.

Harry J. Milligan, Charles E. Gates, J. V. Ritts, Robert B. Keith, L. C. Huesman, I. G. Smith and D. C. Byers, local men, have organized the Union Sanitary Mfg. Co., and will take over the old McElwaine-Richards plant at Noblesville, manufacturing bath tubs and other cast iron and enamelled ware.

The Sanitary Metal Basket Co. will manufacture iron baskets, boxes, etc., at Lafayette, having been organized for that purpose by W. S. Crum, O. P. Morehouse and E. E. Gale. The company is capitalized for $20,000.

RECENT CUSTOMS RULINGS.

The circuit court of appeals, in a divided opinion, held that automobiles imported whose tires accompany them, but are packed and invoiced separately, are dutiable at 45 per cent as entireties under paragraph 193 of the tariff, as articles of metal not specially provided for.

Fishhooks made from round iron or steel wire were held by the board dutiable at 40 per cent plus 1¼ cents per pound under paragraph 137 as assessed and not at specific rates as claimed in the protests.

Mixed goods of tin plates, strips, discs and scraps were held dutiable in protests of Syracuse Smelting Works at 10 per cent, the claim of the protestants, as waste not specially provided for. The collector of customs at New York assessed duty on the tins at 1.5 cents per pound under paragraph 134 of tariff.

STEEL MAKERS COMPLAIN

Concerning Statements of Prof. Arnold —Free Advertising Alleged.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Feb. 13.

The sensation in the iron and steel trades continues to be the recent announcement with regard to high-speed steels. Prof. Arnold's statement conveyed the impression that the present high-speed steel would soon become a back number. Rival manufacturers at first expressed incredulity; but, when sufficient evidence was forthcoming to demonstrate the substantial accuracy of Prof. Arnold's statement, they changed their attitude, and a special meeting of high-speed steel manufacturers this week made a formal complaint to the vice chancellor of the Sheffield University, on the ground that Prof. Arnold, by his statement, had practically given the firm of Jonas & Colver, Ltd., a magnificent free advertisement, naturally to the detriment of other makers. No important consequences have followed, the opinion of the authorities being that, as Prof. Arnold mentioned no names, he could not be blamed. This has by no means satisfied the complaining manufacturers, inasmuch as they consider the preliminary statement so clearly pointed in one direction as to furnish the firm referred to with an enormously valuable opportunity. The incident is likely to restrain the eloquence of university professors in the future. In the meantime, other makers are coming forward with new steels, scarcely inferior to those particularly referred to, and the natural effect has been to cause the cancelling of the orthodox qualities, by users naturally intent upon getting the best article.

The end of the bedstead strike has been quickly followed by other labor troubles, and in Birmingham we have now an engineering dispute threatened, likely to involve 6,000 men, employed by some 40 firms. The employers are asking for a shilling per week reduction on day men and 2½ per cent on pieceworkers. There seems a disposition to compromise, and a conference on the subject is to take place next week.

The South Staffordshire Mond Gas, Power & Heating Co. have just issued their report for last year showing a further loss of £4,850, which has to be added to very heavy losses for some years past, but the directors derive consolation from the fact that the losses are £7,275 less than the previous year.

The Birmingham Railway Carriage & Wagon Co. has just divided 10 per cent with a bonus of 5 per cent among the ordinary shareholders, in addition to 6 per cent preferential dividend. In addition, £500 was voted to the directors as extra remuneration.

THE BRITISH CO-PARTNERSHIP PROJECT.

The fellow-townsmen of Sir Christopher Furness have marked their appreciation of his remarkable effort to put an end to labor troubles in the engineering and shipbuilding trades of the north of England by conferring upon him the freedom of the borough of West Hartlepool. The roll of freedom, which was presented to him by the mayor in the town hall, was contained in a silver casket embellished with figures symbolical of the port and its staple industries. The mayor expressed a confident hope that Sir Christopher's experiment would be successful, "but," he added, "the greatness of this thing does not depend upon its success. It is an attempt to substitute for the barbarity of strikes the bond of mutual interest." Sir Christopher, in reply, said that it remained to be seen whether the experiment would succeed or not. The course had not been sailed before and there was little to guide them. They would all have to be watchful for possible breakers ahead. For his part, he had every confidence in this new navigation and in his new partners. Only the previous week his representatives reported to him that for the first time in the history of the shipbuilding industry, British shipowners were negotiating for the building of ships in foreign yards for employment abroad, and he was simply astounded at the prices that had been quoted. Therefore, he implored everyone in all ranks of the industry to determine that a stop should be put to all the wastage that at present increased cost of production had hampered enterprise at every turn, and especially that there should be no more of those industrial earthquakes which strikes produced.

DEATH OF EDWIN REYNOLDS.

Edwin Reynolds, famed as a steam engine designer and mechanical engineer of wonderful ability, died at Milwaukee on Feb. 19.

Edwin Reynolds was born on March 23, 1831, in Mansfield, Conn., and was the son of Christopher and Charissa (Huntington) Reynolds. He received his early education in the public schools of his native village, and was afterwards apprenticed to Anson P. Kenny in 1847 to learn the machinists' trade. After serving his time he worked in various shops in Connecticut, finally making his residence at Aurora, Ind. In this town he was superintendent of the shops of Stedman & Co., then engaged in the building of engines, saw mills and drainage pumps for the Mississippi plantations. This business was seriously crippled by the civil war cutting off the market, and Mr. Reynolds returned to Connecticut, working at his trade in that state and in New York and Boston.

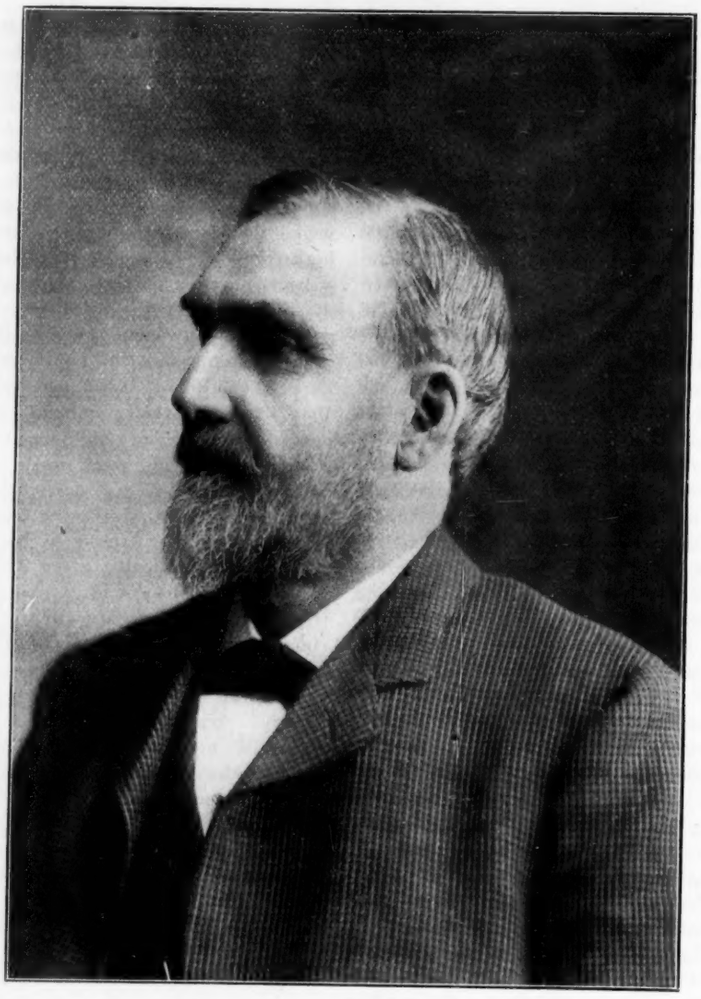
In 1867, Mr. Reynolds moved to Providence, and entered the employ of the Corliss Steam Engine Co. At this time, the Corliss company was the largest and most important steam engine company in the United States. In 1871 Mr. Reynolds became general superintendent of the works, which position he held for six years, resigning to become general superintendent of Edward P. Allis & Co.'s Reliance works at Milwaukee.

Mr. Allis's attention was first attracted to Mr. Reynolds by the Reynolds-Corliss engine, exhibited at the Centennial exhibition. At that time, Mr. Reynolds was reckoned among the first in his profession in the country. Shortly after assuming his position with Mr. Allis, Mr. Reynolds demonstrated that he had not only mechanical genius, but marked ability as an executive, and, under his management, the work of the Allis company became favorably known all over the world. Upon the death of Mr. Allis, Mr. Reynolds became one of the trustees of the Allis estate.

At a foundrymen's convention in Cleveland, he met W. J. Chalmers, and in the course of a conversation, proposed the organization of a company with a large enough capital to take up the Allis works, together with several others, and establish a number of plants. The result of this was the formation of the present Allis-Chalmers Co., of which Mr. Reynolds became second vice president and one of the directors. After the reorganization of the Allis-Chalmers Co., Mr. Reynolds assumed a more commanding position than ever. This establishment is now one of the two or three largest engine manufacturing concerns in the world, and the largest in the United States. Besides his connection with the Allis-Chalmers Co., Mr. Reynolds was president of the Milwaukee Boiler Co., president of the German-American Bank of Milwaukee and also president of the West Allis Malleable Iron & Chain Belt Co. He was the first president of the National Metal Trades Association, and in 1902 was president of the American Society of Mechanical Engineers.

Although Mr. Reynolds was best known for his work in connection with the steam engine, he patented a large number of inventions in various branches of mechanics. One of his more recent inventions was an ore stamp used in the Lake Superior mining regions, in which he replaced the spring timbers with a solid iron bed, and thereby increased the capacity of the ordinary stamp over 50 per cent.

Mr. Reynolds was an honored member of all the leading engineering societies and clubs, and was highly esteemed in the leading social organizations of Milwaukee. In 1885, the board of trustees of the University of Wisconsin conferred upon him, in appreciation of his abilities, the degree of LL.D. When its engineering building was completed, the name of Edward Reynolds was engraved thereon, an unusual honor for a living engineer.



EDWIN REYNOLDS.

Creditors of the Birmingham Coal & Iron Co., now in the hands of the receiver, appointed recently, named a committee to represent creditors, and adopted resolutions favoring the continuance of the operation of the plant so long as it is profitable.

SOME EFFECTS OF GAS POWER ON TENDENCIES AND DEVELOPMENT OF THE NATIONAL INDUSTRY IN GERMANY

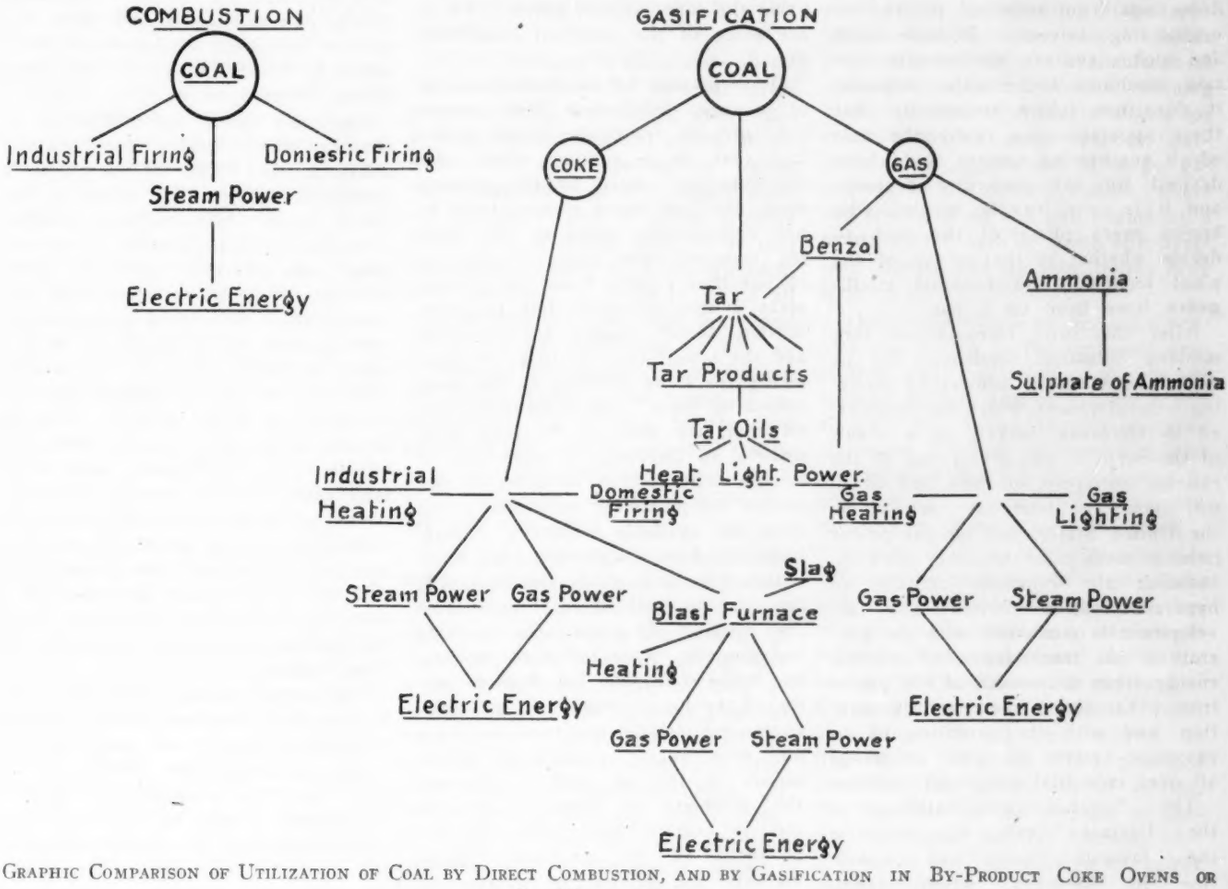
By Dr. F. E. Junge.[1]

Technical economy is only part of national economy; and national economy should be the basis of all industrial activity. In order to grasp the tendencies, aims and effects of technical evolution along particular lines, and in order to be able intelligently to direct technical progress into proper channels, we must keep abreast of the trend of events in general, and we must consider and analyze each problem as part of the great industrial problem of the country, whose welfare we were born to promote.

Viewed from this point of view, concentrated capital, in these modern days, seems the root of much good and the cause of much evil. Some even hold that it is the benefactor of the few and the enemy of the many. Concentrated capital seeking investment in industrial values, and its ally, monopoly, the great discourager of effort in trade, manufacture and profession, will dictate the technical methods to be followed, thereby suppressing individual aspirations. It will tend to level down the art of engineering from the ideal standard of highest economic excellence to the low zone of narrow financial reflection.

Large industrial corporations having combined plants, which handle every phase of production from the raw material to the finished product, which control the transportation of their goods from mines to furnaces and from furnaces to markets, which even raise the required capital—and there is always need of such—from the public circulation through finance schemes of their own, these industrial combines, in spite of all their abuses have become a necessity of modern business in Germany as well as in the United States and wherever tariff walls favor their growth.

Technically considered, modern combined works offer many interesting problems besides these of mere dimension. We wonder how far concentration and aggrandizement can be driven without endangering, by lack of elasticity and failure of administrative ability, the productive efficiency, capacity and economy of the whole complex organism, a question to which only time can give the final answer. A consideration of immediate importance for the engineer is the apparent insufficiency of his influence compared to that of the financial factors of the concern, when deciding about an addition to the old



Graphic Comparison of Utilization of Coal by Direct Combustion, and by Gasification in By-Product Coke Ovens or Gas-Works Retorts.

[1]Gorlitz, Germany.

or about the installment of a new equipment.

Very often, today, changes are by no means effected along the lines which the engineer would suggest as the most rational,—those centering in national economy—but they are executed in compliance with the orders which the non-technical managers of the combine deem wise to prescribe. And with the latter, tinsel, speed and immediacy of success will often outweigh the sounder considerations of solidity and permanence of construction, as, indeed, the most costly installation will always be most desirable to those who profit most by it.

As a result of this state of things we can no longer make sweeping deductions from technical practice to engineering science. Because such and such a concern has installed certain machines for certain purposes, it does not follow necessarily that these apparatus are really the best which engineering science could have devised for the particular purpose; and it is only for the insider, who knows every phase of the deal, to decide whether in the lay-out of the plant technical and financial intelligence have been on a par.

After this brief retrospection into modern industrial tendencies let us draw nearer to the subject by studying a development, which has originated in Germany, largely as a result of the event of gas power and of the rational utilization of coals, and which will sooner or later be taken up in the United States, just as gas power is now making its headway notwithstanding the reluctant attitude of hyperconservative circles. This development is concerned with the generation and transmission of electric energy from the mouth of the pit or from other cheap sources of generation, and with the provision of an extensive system of power exchange all over industrial and rural districts.

The "electric canalization," as the Germans call it, is now the favorite mode of operation in Germany, where conditions are especially favorable to the scheme on account of the fact that all sources, exchanges and needs are so much closer to each other than they are in countries of extensive cultivation like America. It must be remembered that the total area of Germany is only four-fifths the area of Texas, with comparatively meager resources and a population of 63,000,00 of active people to support. The aim of the system of power exchange is, of course, an economic one; to save in initial and operating cost of plants and to balance the stability of output by a corresponding provision for consumption. In other words, to obtain a constant high load factor for the combination of works, which are located within a certain commercial-distribution sphere relatively to each other, and to provide for a common and ample source of energy in cases of emergency. The elimination of special power-generating units and costly reserves at minor places of consumption, and the maintenance of a constant high-load factor at all central stations are the cause of great savings in fixed charges and operating cost. As for the latter item it is well to remember that in some gas power plants an increase of the load factor from 25 to 50 per cent will halve the total cost of power. These are some of the technical considerations.

Other reasons for the fast spreading of energy distribution from mines and furnaces are to be found in the fact that, in a country where the railroads are owned by the government, the coal mine owners have to pay considerable sums to the state for transportation charges. In exchange they receive from the government a not overquick but impartial service, secret rebates are unknown and the smallest dealer is given practically the same facilities as the most influential trust. But notwithstanding all that, the aim of the coal mine owners, in Germany as elsewhere, is to get tonnage, or, in other words, to get the maximum immediate profit from the available resources. Therefore they have sought for other trade outlets for their goods and especially for such as will liberate them from the burden of government charges and control. Now technical progress has made it feasible for them to gasify all the lower grades of coal, those containing much moisture and ash and even coking coal, right at the mouth of the pit, and to transmit the products of higher order, as electric current, gas, coke and by-products, to the markets. These markets are offered in neighboring cities, where heat, light and power are required by railroads, canals, for electric traction, etc.

This mode of transforming raw coal into products of higher order and transmitting these by wire, cable or pipe, means for the government a loss of income from coal freights, with no substitute to fill the fiscal purse. It is natural, therefore, that a state monopoly for the production and distribution of electricity should have been proposed. "We are face to face today with the inauguration of a period in which electricity will become the most important factor in our whole industrial system. We can say, in the light of scientific research, as well as of practical experience, that all indications point to the necessity of centralizing motive powers. We are convinced that the era of electricity, which we are approaching, will compel the nation to organize a systematic exploitation of the natural resources of electricity, etc." This is the trend of thought which was offered in favor of electrical monopoly. However, it is too radical a proposition to be realized at once, and so a tax on electricity and gas was suggested instead. Now there is a hue and cry all over Germany that a new burden is laid upon the national industries in addition to those which territorial adversities and limitations inflict upon it.

This may seem quite true in a country which prides itself of an individualistic form of government, though the co-operative policy of the trusts stands there in bold defiance of the ideal. In a country of bureaus things are different. With the spirit of military discipline permeating the whole nation we believe it proper that some means of control should be devised to check the over zealous efforts of private monopoly powers, as soon as their business methods become dangerous to the commonwealth. This is the case with overland centrals, who become the suppliers of heat, light and power to large and densely populated districts of the country and are placed in a position to direct the activities of a thousand depending industries, communities and individuals, according to their notion.

The accompanying chart will make it clear, how the event of the rational gasification of coal has increased the number of possibilities for the owners of coal mines to reach the market in various forms, whereas, the traditional process of coal combustion left him only one outlet. In the latter case he is simply a supplier of raw materials, getting a comparatively constant price for his coal, and depending for an increase of his business solely on the growing volume of consumption. The more coal is wasted in industrial pursuits the better for him. In the other case, which to us seems the more rational from any point of view, he supplies a number of products of higher order, whose price is by no means a fixed quantity, and whose value is increasing daily. The large scale distribution of electric current from mines and

furnaces has become an economic possibility only by the event of the perfection of gas producers, by-product coke ovens and large gas engines, and the resulting concentration of industries of higher order at the mouth of the pit has given the coal mine owners both an increase of business,—depending instead of on the quantity on the quality of consumption,—and an increase of their powers within the state.

Now, the ordinary means of controlling the price policy of private corporations, which the German government has had at its disposal so far, consisted either in adjusting the prices of identical goods produced by the state, as is done with coal, or raising or lowering the tariff, as the case may be, or to regulate freight rates, as has been done with very good effect in a number of industries. Obviously these three means would not work with a combine, which generates and distributes besides other products, electric current on a large scale. To give an idea of the size of these overland centrals we may mention the Rhenish Westfalian Electric Central Station, or rather the "Verbandeselektrizitatswerk," with a generating capacity of 23,000 kilowatts in 1907. Reports from the largest of the combined plants show for 1908 a distributing net of 43,400 kilowatts, 1,357 kilometers long, In the lower Rhenish coal district an overland central will supply the counties of Cleve, Geldern, Kempen, Mors and Rees. The territory supplied with current covers 483,000 acres, with 300,000 inhabitants, 11 large and 127 small cities and 490 villages.

It is obvious that a dependence of such a vast number of public and private interests upon the benevolence of an electricity trust is dangerous. This, of course, is a matter of opinion. People in America dread governmental domination more than they fear the oppressive might of capital. Even in Germany the new fiscal policy of the government has few friends. As was said above, there is a strong belief that the tax on electricity might harm the development of the national industry. I do not share this belief.

As a matter of fact, the Germans have always had to labor under fiscal and other pressure, with scanty resources to draw upon, and with plenty of competition to make things harder. And their success in the world's markets—paradoxical as it may sound—is largely due to that fact. Because for every new obstacle that confronted them, they have found a way to overcome it, and for every new need they have evolved new supplies; and it is on these premises of advanced thought and superior products that Germany's whole export trade is based. The industrial policy of Germany is dictated and framed according to the inexorable law of "fight for existence," and in few words can be thus defined: A nation which is restricted to meager natural resources, and which has to support a large number of people on limited areas, having racial and climatic conditions which favor the development of the intellectual faculties of the people, a nation, thus situated, in order to be able to exist, must needs be progressive, and must train to the utmost its creative powers, that they may evolve new values acceptable to richer nations.

When intelligently dealt with, adversity can become the root of great progress; even in America, where man is receiving for his toil a readier reward than elsewhere in the world, conquering with ease a higher average of comfort than is known in other lands. For it would seem to us that the unique feature of American technical progress, in which it excels all foreign industries in large scale and automacity of production, is due, in addition to the unrestricted production and consumption of the bountiful resources of the ground, to the less agreeable fact of high price and scarcity of labor, long distances, etc., which made adequate solutions an indispensable necessity.

In Germany we have to console ourselves with the words of Lord Bacon: "Prosperity is the blessing of the old testament; adversity is the blessing of the new, which carrieth the greater benedictions." Especially is this so in our iron industry. Generally speaking, the vast and continuously increasing demand for iron and steel must be accompanied, inevitably, (1) by the growing difficulty to find suitable ores in sufficient quantities and qualities, and at convenient distance from the fuel supply. (2) By an increase in the weight of coke that must be charged at the furnaces together with the ore for smelting the latter. (3) By a rise in the cost of production for half finished and finished goods, owing to the higher prices that must be paid for ores, fuels and labor.

Therefore, the productive efficiency of iron and steel works, especially of those independent works that have no coal mines of their own and no control of the transportation factor and their capability to compete with combined works must in future, more than ever before, depend on the right husbanding and on the proper valuation cost for storage equipment—can be realized through the judicious utilization of waste gases and of inferior grades of coal, and their application for a variety of purposes within the works, for which at present costly boiler coal and furnace coal must be bought.

In addition to the remunerative returns realized from the sale of half finished or finished goods or both, can the earning capacity of combined works be increased by selling surplus gases and low grade coals in form of electric current for heat, light and power purposes in neighboring districts.

The only means that have been devised so far for obtaining proper utilization, that is for covering all inside requirements from the available gases and other waste and, besides, retaining a large amount of energy available for more profitable usage outside, consist in the application of large gas engines in the central station, where the weakness of the gas engine as a prime mover can be most effectively counteracted and its good points fully secured.

This modern mode of operation enables one, owing to the economic generation and transmission of electric current, both to employ electric drives all over the works, thereby securing maximum economy of operation, and to distribute the remaining energy to neighboring industrial centers, cities, railways, waterways, etc., at a profit.

In some sections of our country this combination of iron and steel works with overland central stations has proved very profitable to the stockholders of the concerns. As a fair average the addition of a gas engine-driven station to a combined plant pays about 20 per cent interest on the capital invested. The principal condition for success is, of course, that markets for the disposal of current are not too far distant, else initial cost and transmission losses eat up the profits.

The most unfavorable conditions for the iron industry obtain in the southwestern part of Germany and in Luxembourg. There coal and ore are not available within reasonable distance. The Minette ores contain no more than 28 to 30 per cent iron and require considerable quantities of coke per ton of pig at the furnace. Coke must be shipped either from the Saar or from the Ruhr districts, and freight rates are high. The amount of coal which is used in the steel works of a combined plant averages about 300

to 400 kilograms, (one kilogram equals 2.2 pounds) per ton of finished goods. The amount of coke required in the furnace averages 1,000 kilograms per ton of pig, or 35 to 40 per cent of the net cost of the product.

When coal mines are attached to iron and steel works coal is used in various ways. (1) The inferior grades of coal, mine culm, waste, etc., are gasified in producers especially equipped for the purpose, preferably recovering from the material some of the by-products. (2) Fat coal is coked in by-product coke ovens, with the recovery of tar, benzol and ammonia. (3) Dust coal and other material of small size, which it would be unprofitable to transport, is either used for direct grate firing, or it is gasified in producers, or it is transformed to briquettes, and the surplus of these shipped to markets, through the coal syndicate.

The most efficient of all processes of coal utilization is undoubtedly the coking of it in by-product coke ovens, and the subsequent use of the coke in the blast furnace. One ton of coking coal which is thus charged to the oven, and which may contain five per cent ash, 20 per cent volatile matter and 75 per cent carbon, will produce the following values: 200 kilograms of volatile matter give 2.5 kilograms of NH_3 or 9.7 kilograms of sulphate of ammonia; further 25 kilograms of tar, 4.5 kilograms of benzol and 135 effective horsepower developed in coke-oven-gas-engines. The 750 kilograms of carbon charged to the furnace together with the ore, will yield 800 kilograms of pig iron, 1,000 to 1,500 kilograms of slag, used for making cement and bricks, and 600 horsepower developed in blast furnace gas engines.

As a matter of experience the savings resulting from a reduction of the fuel bill by the adoption of gas power vary from 50 cents to $1.25 per ton of pig made, according to the locality and extent of application. The income from surplus energy and from by-products will naturally be higher in a concentrated country like Germany, with highly developed chemical industries, than it could be in the United States under present conditions. In the case of steel works gasifying all their coal (200 tons daily) in producers, and recovering only one by-product, sulphate of ammonia, from the gas before using it in the steel furnaces, the saving is reported to amount to $400 per diem, thus reducing the self cost of raw steel by from 50 to 75 cents per ton. Of course, all this refers to commodity prices as we have them in Germany. Coal is much more costly than it is in America, while labor costs about one-third, taking the average of twelve trades.

EFFECT OF TITANIUM ALLOY ON STEEL.[1]

By Charles V. Slocum.

In The Iron Trade Review of Nov. 14, 1907, were described the effect of alloying titanium with iron. The notes below show the effect of titanium on steel, being the results of work carried on at various steel plants throughout the country.

Bessemer Steel.

The first full heat of Bessemer steel treated with titanium alloy in this country was made at the works of the Maryland Steel Co., in November, 1907, under the supervision of Simon B. Martin. The steel made at this trial showed so much improvement over ordinary Bessemer steel that further trial heats were made on Dec. 16, 1907. These trials developed several remarkable features, probably the most important of which was the great increase in the quantity of slag removed from the steel. The treated metal invariably lay "dead" in the ingot molds. It was free from blow holes, and the treated ingots were noticeably hotter than the untreated ones. The pyrometer record for the day's work showed an increase of at least 15 degrees Cent. in the heat of the treated metal at a given point in excess of that of the untreated metal at the same point when passing through the rolls.

The titanium alloy was added in the ladle after the blow and after the manganese, the former being shoveled in cold while the steel was flowing into the ladle. Aluminum was not used, and should not be used in any case with titanium alloy. After adding the alloy in the ladle, it should be held from three to 15 minutes before teeming, counting from the time the alloy is added, and then poured as usual.

Other Trials of Bessemer Steel.

A trial in a full heat of Bessemer steel was made at the Duquesne works of the Carnegie Steel Co., on Dec. 12, 1907. Several trials of titanium alloy were made by the Cambria Steel Co., the first being on March 7, 1908. These tests have continued since, and they are still in progress. Exhaustive trials of titanium alloy were made at the works of the Lackawanna Steel Co., in 1908, which were remarkably successful. Rails treated with titanium alloy made by the Maryland Steel Co. have been in service for several months on Kesslers curve on the Cumberland division of the Baltimore & Ohio railroad, where traffic and grade are both heavy. Diagrams of these rails have been taken at intervals of two to three weeks, together with diagrams of plain Bessemer rails put in at the same time and place. The titanium rails showed a durability greatly in excess of the plain rails, which, although of the best quality of Bessemer steel, have flattened or "flowed" considerably. At this writing the titanium rails have not flowed at all. The upper plain rails are cut down practically to the full depth of the flange of the wheels, while the upper titanium rails are cut less than half this amount.

Open-Hearth Steel.

Titanium alloy has been used by many mills in open-hearth steel with unvarying improvement of the product. The general characteristics are: Freedom from blow holes, an increase of the elastic limit, increased reduction of area, etc. Like in Bessemer steel, the quantity of slag removed by the alloy from open-hearth steel is remarkable. It is proper to state that the titanium passes off with the slag which it removes, unless unusual quantities of the alloy be added, when the excess above the quantity necessary to remove the impurities remains in the steel.

Rolls and Casting.

Rolls of open-hearth steel treated with titanium alloy are closer grained, free from blow and pin holes, are durable and more easily machined than rolls from untreated metal. Open-hearth castings from metal treated with the alloy are more blue in color, are free from blow holes and brittleness and are easily machined and heat less under the tool than ordinary castings.

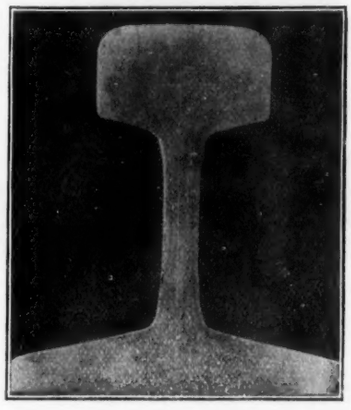
Analysis.

By analysis, titanium will be found

[1]From a booklet issued by the Titanium Alloys Co., Pittsburg.

in the alloy before using and in the slag afterwards, with sometimes traces in the steel, unless, as previously stated, an excess has been used above the actual requirements. Whenever titanium and phosphorus are present simultaneously, the former interferes with the determination of the latter to the extent of showing a much greater percentage of phosphorus than is really present; the precipitate weighed as phosphorus compounds to determine phosphorus containing titanium, as titanium phosphate, unless, being aware of the simultaneous presence of these elements, the analysis is carried on under special conditions.

Titanium alloy contains 10 to 15 per cent titanium; 5 to 7 per cent carbon; all other impurities total less than 0.5 per cent. The balance is of the best quality of iron, electrically



PLAIN BESSEMER.

Section showing slag and segregation in ordinary steel rails.

refined. Some 80 per cent of the titanium alloy being iron, it must necessarily dissolve at the ordinary melting point of iron; the titanium immediately unites with the oxygen and nitrogen in the metal, increasing its heat. The increased heat of the molten metal caused by the titanium reaction is variously estimated at from 30 to 50 degrees Cent.

Sulphur and Phosphorus.

One metallurgist claims a reduction in the sulphur and phosphorus content by the use of titanium, but our investigations do not fully confirm this. We found, however, that titanium alloy counteracts the obnoxious action of both sulphur and phosphorus, which, with the unquestionable increase in slag removed makes Bessemer and open-hearth steels of the quality nearly equal to crucible steel, while crucible steel is itself improved by it in every way.

The proportion of ferro-silicon used in the metal should be decreased when titanium alloy is used, and sometimes entirely eliminated. We suggest that silicon be reduced gradually from time to time until no further improvement is noted. If dirt specks are found in the surface or skin of the steel, the ferro-manganese should be slightly increased by the addition of, say, 10 pounds for each 100 pounds of manganese used and the ferro-silicon should be omitted.

Tests.

The following tests of open-hearth steel have been selected from a great number made merely to show the uniformity of product and general benefit attained by the use of titanium alloy. In a heat of open-hearth steel in the Pittsburg district recently, 0.75 per cent of titanium alloy was used. The uniformity of the steel was remarkable; there was an entire absence of segregation; the pipe was reduced; the elastic limit was between 60,000 and 65,000 and the elongation from 26 to 28 per cent in 8 inches. At an eastern steel mill, where 1½ per cent of titanium alloy was used, the following remarkably uniform figures in pounds per square inch ultimate strength were obtained: 90,322; 96,600; 96,969; 93,800; 94,600; 94,000; 90,000; 96,400; 96,976; 99,400.

A paper read before the American Electro-Chemical Society in October, 1908, by F. A. J. Fitzgerald, contained the following results on 1-inch square test bars hammered from 6 x 6-inch bottom cast ingots:

Heat No.	Tensile strength, lbs. per sq. in.	Elastic limit, lbs. per sq. in.	Elongation, per cent.	Reduction of area, per cent.
9	57,000	34,000	33	58
27	77,000	45,000	28	56

Among several analyses given by Mr. Fitzgerald are the following for the two heats mentioned above.

Heat No.	9	27
Carbon	0.10	0.22
Manganese	0.75	0.94
Phosphorus	0.015	0.033
Sulphur	0.070	0.056
Silicon	0.02	0.03

A bar of steel 4 feet long, 1⅛ inches square made from this titanium steel (heat No. 27) was subjected to a cold twisting test, making seven complete turns without fracture shown in Fig. 5.

Crucible Steel.

Perhaps the most remarkable results so far obtained with titanium have been in the crucible. It has been found in many instances that titanium alloy increases the strength of nickel and chrome nickel steels. It is a well known fact that, when nickel is added to steel, an important percentage of oxide of nickel is formed. Titanium alloy used afterwards thoroughly deoxidizes the metal. The alloy also removes nitrogen in the proportion of about four parts titanium to one part of nitrogen, an important factor since neither chrome, nickel, molybdenum nor tungsten combines with nitrogen, so that none of these metals nor their ferro-alloys can be used for removing this gas to form with it a stable combination to pass into the slag. At this point the following statement from Monsieur Le Chatellier, is pertinent: "The treatment of all steels with ferro-titanium for the purpose of purification of the metal is strongly recommended. The presence of nitrogen to the extent of 0.02 to 0.045 or 0.035 per cent in

TITANIUM BESSEMER.

Section showing entire freedom from slag, segregation, etc., by the addition of titanium. The ingots are absolutely free from blow holes.

certain steels is enough to cause the metal to break asunder, destroying all elongation and reduction of area." Many users prefer to add titanium alloy with the charge of metal to be melted down. In such cases, it should be added well down toward the bottom of the crucible. It has, however, been successfully added after the metal is boiling. When manganese is added at this time, the titanium alloy should be added after the manganese. Aluminum should not be used in connection with titanium alloy at any time. It causes the steel to be brittle, while the latter eliminates brittleness. Hence the two alloys are antagonistic.

Titanium Alloy in Iron.

The effect of titanium alloy in iron is to remove the oxides and nitrides

as in steel, to increase the fluidity of the metal and to increase the quantity of the slag, which it not only removes, but with which the titanium passes off. The resulting product is stronger, more durable and more easily machined than plain iron. The casting heats less under the tool and gives greater resistance to shock, strain or wear. Titanium alloy has been used with success in gears, pin-

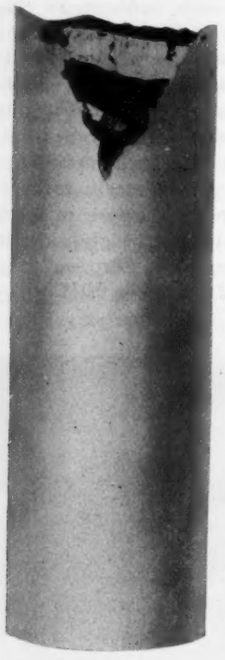


FIG. 3—TITANIUM BESSEMER INGOT.

ions, automobile cylinders, dies and die blocks, chilled rolls, car wheels, etc.

Tests made by Prof. M. Hokanson, at the Carnegie technical schools, Pittsburg, demonstrated the crushing strength of chilled iron to be increased nearly 100 per cent by the use of 1 per cent titanium alloy. Prof. Bradley Stoughton, of Columbia University, recently placed this increase in strength of gray iron castings at 20 to 40 per cent. Tests by the Brinell method show that chilled or white iron is harder than the untreated metal, although the chill is reduced by the alloy, and yet gray iron back of the chill is readily machined. Chilled iron test pieces were tested by the United States government bureau of standards, at Washington, with the following results:

	Titanium iron.	Plain iron.
Height, inches	0.9967	0.9970
Compressed surface, inches	0.9977 by 0.9951	0.9969 by 0.9969
Ultimate strength, pounds per square inch	249,100	212,000
Approximate elastic limit, lbs.	100,000 to 120,000	70,000 to 80,000

Applied Load.	Length of sample inch.	unloaded, inch.
10,000	0.9967	0.9970
75,000	0.9967	0.9969
80,000	0.9967	0.9967
85,000	0.9966	0.9963
105,000	0.9965	0.9954
115,000	0.9964	0.9949
120,000	0.9961	0.9945
130,000	0.9959	0.9938
150,000	0.9951	0.9923
180,000	0.9940	0.9886
200,000	0.9933	0.9836

At the wheel foundry of the Norfolk & Western Railway Co., Roanoke, Va., in August, 1908, 1 per cent titanium alloy was used in the charges and passed through the cupola without any more handling whatever. Sixty wheels were poured from the metal treated with the alloy in this manner, and 15 test bars 2 x 2 x 24 inches were made during this period. After all the treated metal had been poured, 60 other wheels were poured and 15 more bars taken from the plain metal. After annealing, these bars were all broken on supports 21 1/3 inches apart. Two bars were imperfect, but the comparative results of the other 26 are given below in deflections, the breaking strains not having been furnished:

DEFLECTION, INCHES.

Treated metal.	Plain metal.
0.075	0.070
0.120	0.090
0.230	0.190
0.325	0.180
0.085	0.075
0.160	0.125
0.080	0.075
0.085	0.090
0.215	0.180
0.360	0.315
0.080	0.075
0.065	0.065
0.350	0.265
2.230	1.795

It will thus be noted that the car wheel iron treated with titanium alloy gave 24.4 per cent greater deflection under stress than the plain metal.

Titanium alloy may be used in iron in several different ways: In the furnace or cupola, in the spout or ladle, and in the crucible. With the first two methods, it is only necessary to add the alloy to the charge or charges without further attention. When the reservoir ladle of iron is to be treated, the alloy is fed into the spout when filling the first half or two-thirds of the ladle. It is useless to add it later, as it then unites with the slag, and could have no effect on the iron.

In treating iron in the smaller ladles, such as is required for 100 to 500 pounds of molten metal, the alloy is fed into the stream while filling the first half of the ladle. The whole mass is stirred vigorously for a moment with an iron rod, which operation need not be hurried.

The percentage of alloy to be used varies with the grade of iron to be treated and the results desired. Or-

FIG. 4—PLAIN BESSEMER INGOT.

dinarily, 1 per cent is found to be a good proportion, that is, one pound of alloy to 100 pounds of iron. In crucibles 0.5 per cent will be found to give good effect.

Titanium Alloy in Copper and Brass.

We are unable at this writing to give as definite information as is desired concerning titanium in copper and brass, yet the several trials made indicate a distinct improvement in the product, including freedom from blow holes, and solid castings can be obtained by the use of recently developed cupro-titanium. The proportion of alloy to use is about the same as with ferro-alloys, although the best results have been obtained with 1½ to 2 per cent in copper.

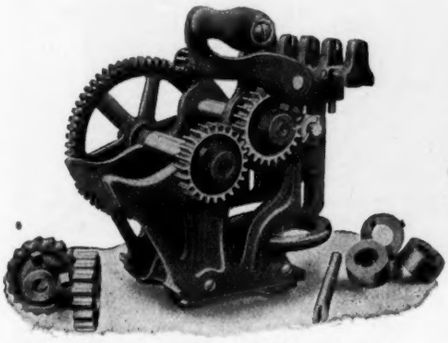
Arrangements are being made to overhaul the furnace of the Sheffield Coal & Iron Co., at Sheffield, Ala.

FIG. 5—STEEL 1⅛ INCH x 1⅛ INCH x 4 FEET TWISTED COLD. SEVEN COMPLETE REVOLUTIONS. FROM HEAT NO. 27 TREATED WITH 1 PER CENT TITANIUM ALLOY.

A COMBINED FORMING, FLUTING AND BENDING MACHINE.

An interesting forming and bending machine for light architectural iron and steel work has been developed and is being marketed by the Royal Manufacturing Co., Lancaster, Pa. The tool is used for bending small rings or circles either of square, channel, tee, flat or angle iron or steel to a size not over ½ inch square or proportionately when applied to other shapes. The service performed is stated to be as perfect as any bending machine of larger size.

A combination arrangement is attached to the machine for plaiting soft steel 1/16 x 5/16-inch or over in width up to ½ inch. This part



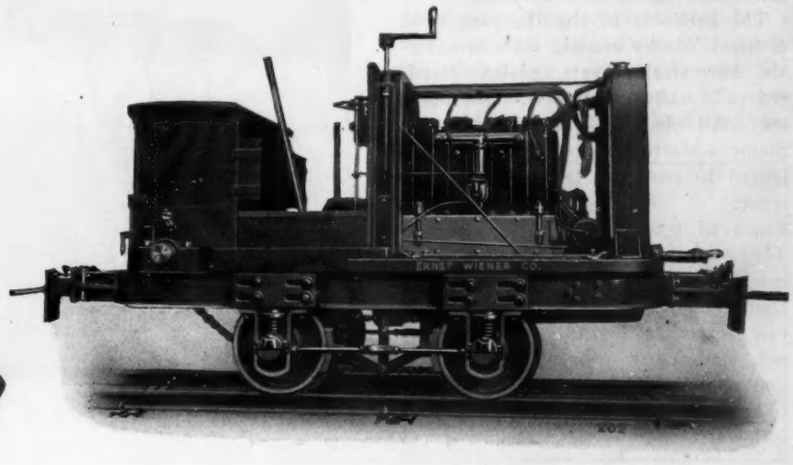
HAND POWER FORMING, FLUTING AND BENDING MACHINE.

does artistic work and is used principally in elevator and office work. The gears or intermediates may be removed and be used as a crimper handling soft steel of ½ x 1/16 inch in size. The service derived from this latter is in the fashioning of grills, lamps, etc., and ornamental iron work.

The forming and bending machine is used to a great extent by ornamental iron workers, tinsmiths, lock makers, blacksmiths, and in many machine shops where small repair work is handled, saving the anvil and hammer. The work produced on this machine is smooth and shows no blows.

A GAS LOCOMOTIVE FOR INDUSTRIAL SERVICE.

The accompanying illustration shows a gasoline locomotive, which has recently been built by the Ernst Wiener Co., 50 Church street, New York. The locomotive is made up of the Wiener standard, one-piece, 6-inch channel frame with Wiener standard roller bearings and draft gear and with a 35-horsepower Brownell water-cooled motor. The motor is located under the hood and is controlled by an advance and retard throttle and spark placed directly in front of the operator's position. The driving wheels are four in number and 14 inches diameter. They are driven by chains from the transmission gear. The locomotive has forward and reverse speeds, the forward speed giving from 3 to 12 miles per hour in hauling loads of 25 tons. The gasoline tank has a capacity of 20 gallons, which is sufficient to last for two working days of ten hours. The locomotive is designed to have wide application in industries in which



THE WIENER GASOLINE LOCOMOTIVE FOR INDUSTRIAL SERVICE.

industrial railways are used. The following table gives some of its principal dimensions:

Total height	58 inches.
Length over all	113 inches.
Width	36½ inches.
Gage	24, 30 and 36 inches.
Weight (24-inch gage)	5,000 pounds.
Hauling capacity	25 tons.
Wheel base	30 to 48 inches.
Cylinders, four	4½ x 5 inches.

Ore Testing Plant.—The American Grondal-Kjellin Co., 45 Wall street, New York, has installed a testing plant for the concentration of iron ores according to the Grondal system at Sheridan, Pa., where ores will be received and tested free of charge. Having attained eminent success in Europe, where at present more than 30 Grondal process plants are in operation, the American company is undertaking to have the processes more thoroughly understood by the iron producers in this country.

The Western Foundry Co., Chicago, will begin at once the erection of a new cupola building as an addition to its present foundry. The land on which the building is to be erected is 117 x 232 feet, and the cost of the improvement is to be $15,000.

THE IRON AND STEEL WORKS AT HANYANG, NEAR HANKOW, CHINA.[1]

The Hanyang Iron & Steel Works is situated in a swamp which has been filled with blast furnace slag and cinders. The plant now includes modern basic open-hearth furnaces, two blast furnaces with a daily capacity of 250 tons, rail mills, plate mills, bar mills, structural mills, etc. The works cover an area of 120 acres and employ 3,450 Chinese laborers and 20 foreigners as engineers, superintendents and foremen. Another blast furnace with a capacity of from 250 to 300 tons daily is being erected. The open-hearth furnaces are four in number and have a daily capacity of 300 tons.

The Chinese workmen in the plant are very satisfactory and afford an abundant supply of cheap labor. Skilled Chinese mechanics receive from $5 to $40 per month, the average price being about 30 cents a day in American money. Coolies and common laborers are paid 10 cents per day.

The iron ore is brought up the river from Tayeh in steel lighters in tow of tugs which operate regularly and in steam lighters of about 1,000 tons capacity each. The supply of ore is enormous. It is estimated that the Tayeh mine alone can supply 1,000,000 tons of ore annually for 100 years. The output of iron ore from the mines is from 1,000 to 1,500 tons daily. Not all of this goes to the Hanyang steel works, however, as large quantities are shipped direct to Japan. The ore analyzes as follows: SiO_2, 5.00 to 7.00 per cent; Fe, 65.00 to 68.00 per cent; P, 0.10 per cent. Sulphur not given.

[1]Extract of a report read by H. S. Hastings at the dinner of the United Metal Trades of the Pacific Coast, Seattle, Dec. 22.

The coal comes from mines situated at Ping Hsiang, Kiangsi, about 290 miles up the river. The coal mines are producing from 1,200 to 1,500 tons of coal per day, which, it is expected, will be increased to 3,000 tons per day in a few years. Coke is made at the rate of 400 tons per day in 180 coke ovens. It is of very good quality and entirely suitable for blast furnace use. The available supply of coal is also large and is estimated to be 500,000,000 tons. The coal and coke is brought down stream to the works in rude native boats which are roughly put together for the one trip and are knocked to pieces and sold as lumber after discharging their cargoes.

The products of the Hanyang Iron & Steel Works are pig iron, structurals, bar steel, sheets, plates, standard rails, railway supplies, nuts, bolts, etc. All the steel is made by the Siemens-Martin process and is required to pass the tests and requirements of British Lloyds, British board of trade, Bureau Veritas, etc. The works are provided with testing machines and chemical laboratories in charge of experienced men, and all raw materials, whether inspected or not, undergo a thorough mechanical and chemical test.

Analyses of pig iron made are as follows:

	Si	Mn.	P.	S.	C.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
No. 1	2.5—3.00	0.5—1.0	0.1—0.0	0.02—0.04	3.2—3.5
No. 2	2.0—2.50	0.5—1.0	0.1—0.0	0.02—0.04	3.0—3.2
No. 3	1.5—2.00	0.5—0.9	0.1—0.2	0.04—0.05	3.0—3.2
No. 4	1.0—1.50	0.5	0.1—0.2	0.05—0.08	2.5—3.0

The physical qualities of the steel are as follows:

	Tensile strength, tons per sq. inch.	Per cent elongation, distance between marks 200 mm.	Per cent carbon.
No. 0	23.0—	28.0—32.0	0.08—
No. 2	25.5—29.0	22.0—27.0	0.10—0.15
No. 3	29.0—32.0	19.0—24.0	0.15—0.20
No. 5	38.5—45.0	12.0—17.0	0.30—0.40
No. 7	51.0—51.7	4.0— 8.0	0.50—0.60

The Hanyang Iron & Steel Works is a stock corporation with a capital of 3,000,000 taels ($1,800,000), formed by imperial sanction. The works follow British practice, in general, and roll British standard sections. With the exception of the rolling mills the machinery is electrically driven throughout. During 1907 this plant exported 37,000 tons of pig and manufactured iron valued at $837,933, of which 1,500 tons went to New York. During the same year 105,690 tons of iron ore was exported, worth $187,670. Most of this went to Japan.

Near Seven Mile creek, Hankow, a subsidiary corporation, the Yangtse Engineering Works, has erected an extensive plant for the construction of bridges, railway switches and cars.

AN INTERESTING DESIGN OF STEEL ANNEALING BOX.

The severe conditions to which the annealing box is subjected in steel works operations, especially where annealing facilities are limited, has directed the attention of manufacturers toward the design and construction of a box which will best withstand repeated firing.

A noteworthy type resulting from this effort is the Seigh patent annealing box which has recently been placed upon the market. It was invented and patented by J. M. Faris, master mechanic of the Youngstown Sheet & Tube Co., Youngstown, O., Frank Seigh, foreman of the boiler and structural work at the same plant, and L. J. Campbell, now a student at Yale university, and was designed primarily for use at the works where these men were employed. The Youngstown Sheet & Tube Co. had been meeting with considerable trouble in its annealing work, due to a lack of annealing facilities to handle its tonnage. The boxes being fired hard and rapidly had insufficient time to cool properly, and soon gave way under the severe service. In its effort to solve this problem, the company used many types of boxes, even importing some from England, but with poor success.

The original purpose of the inventors of the Seigh box, was the designing of a box that would withstand all manner of conditions. After considerable preliminary experiment, the present design was adopted and a test box built. This was put in use by the company, and the excellent results obtained induced the inventors to seek a patent and to place their product upon the market, which has now been done.

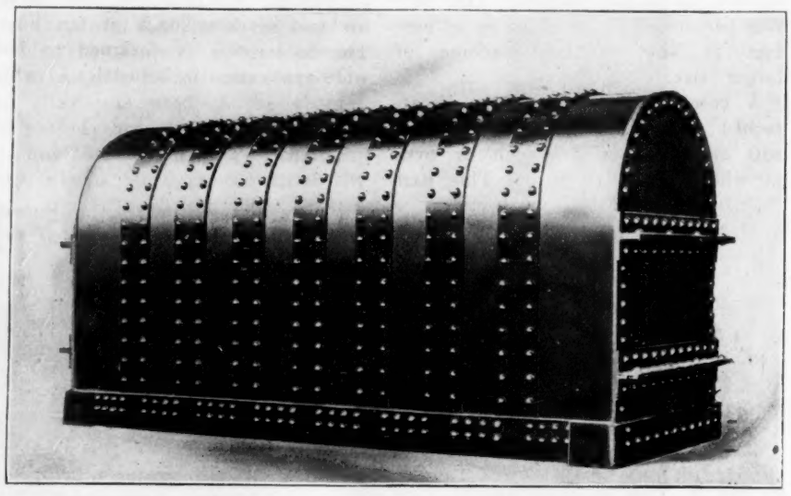


FIG. 1—SIZE M, SEIGH ANNEALING BOX.

The box is somewhat radical in design, but has been carefully built with the idea of avoiding common weaknesses, such as caving in at the top, bulging or caving in at the sides, and the springing of leaks. It was figured that the cause of many of the difficulties in annealing boxes was the loss of shape, and that when the original outline is lost, a strain is placed on the rivets and parts not intended to carry this burden. The result is, that being overloaded, they give way, and it was believed that if a box was built which would hold its shape, a major part of the problem would be solved. The Seigh box is built of a series of channel bars bent in the form of the letter U with the flanges on the outside. These flanges with a filler plate between them, are fastened together, the riveting all being inside the box where it is protected from the fire. In the crown of the box the filler plates fan out into arch plates which follow the contour of the roof and are riveted all the way round. At distances of 15 inches along the length of the box, there are placed braces approximately 2½ inches thick x 4 inches wide which are formed by the flange of the

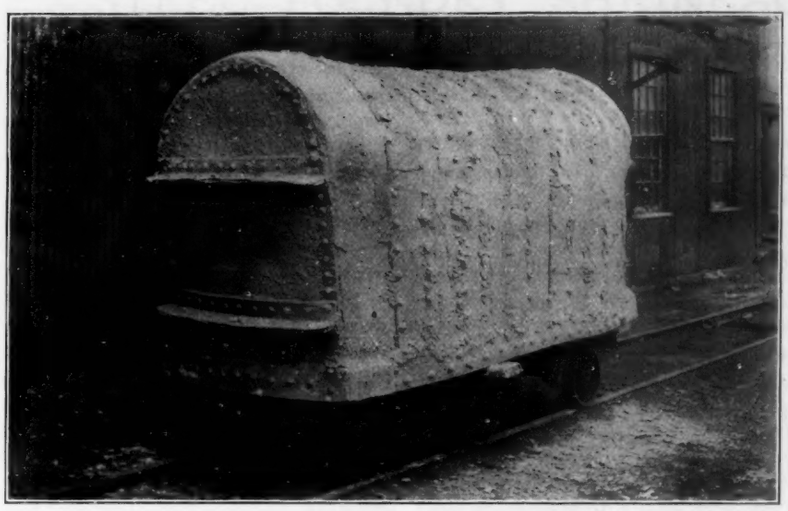


FIG. 2—SEIGH ANNEALING BOX AFTER 175 FIRINGS.
This was the first annealing box built and is still in use by the Youngstown Sheet & Tube Co.

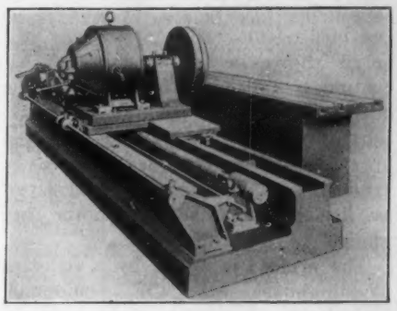
channels, the filler plates and the arch plates, and fan out into broad rafters in the crown of the box. Where 12-inch and 13-inch channels are used, these braces fall that much closer together. This construction prevents the roof from sagging as the box must be melted before the roof will fall. The butt straps covering each joint between channels add further strength. The ends of the channels rest on heavy angles which run the length of the box. These angles in turn rest upon a heavy 4 x 4¼-inch bar, the whole being securely riveted together, and the combination reflects the strength of construction to be overcome before bulging or buckling ensues. The ends are made of ¾-inch plates and have two pairs of heavy angles butted together and riveted. These angles afford considerable strength and at the same time may be used to handle the box. The material used in construction is the open-hearth steel. The riveting is done hydraulically and every seam calked. The boxes weigh from five to seven tons each according to size.

After making a thorough test the Youngstown Sheet & Tube Co. adopted the box, and its plant is now equipped with them. The box is also in regular use at the Wellsville and New Philadelphia plants of the American Sheet & Tin Plate Co., the American Rolling Mill Co., Middletown, O., the Berger Mfg. Co., Canton, O., the Empire Iron & Steel Co., Niles, O., the Inland Steel Co., Chicago, La Belle Iron Works, Steubenville, O., and the Niles Iron & Steel Co., Niles, O.

The Loxit Motor Lock Co., North Tonawanda, N. Y., whose incorporation was recently noted, has these officers: President, Dr. Pemberton Lundy; vice president, George A. Fowler; secretary and treasurer, Samuel J. Elliott. The company is arranging for a factory, with $30,000 capital, and will engage in the manufacture of locks for motor boats, automobiles, etc., or anything operated by motor.

MOTOR-DRIVEN TRAVELING HEAD FACE GRINDER.

Progress in one direction of manufacturing begets progress in another. This is no better instanced than in the developments which have taken place in recent years in machine tools. The use of high speed steel for the tools has permitted the more rapid machining of ordinary work, and hence a redesign of the tools, as well as the working of the various grades of hardened steel. But the progress has gone so far in its demands for all sorts of hardened steel products that in some instances it is more satisfactory to remove the material by grinding than by machining. It is interesting to recall that but a few years ago grinders were used only for sharpening tools, and were not very satisfactory for that, while now they grind away not the tool that cuts



MOTOR-DRIVEN TRAVELING HEAD FACE GRINDER.

the metal, but the actual work that is to be done.

A very satisfactory type of traveling head grinder is here illustrated, known as a face grinder. It is particularly adapted to the work of structural iron workers, bridge builders, safe makers, and manufacturers in kindred lines, where it is necessary to grind to exact figures any materials that are liable to be too hard to be machined, such as beams, columns, steel safe plates, cast iron floor

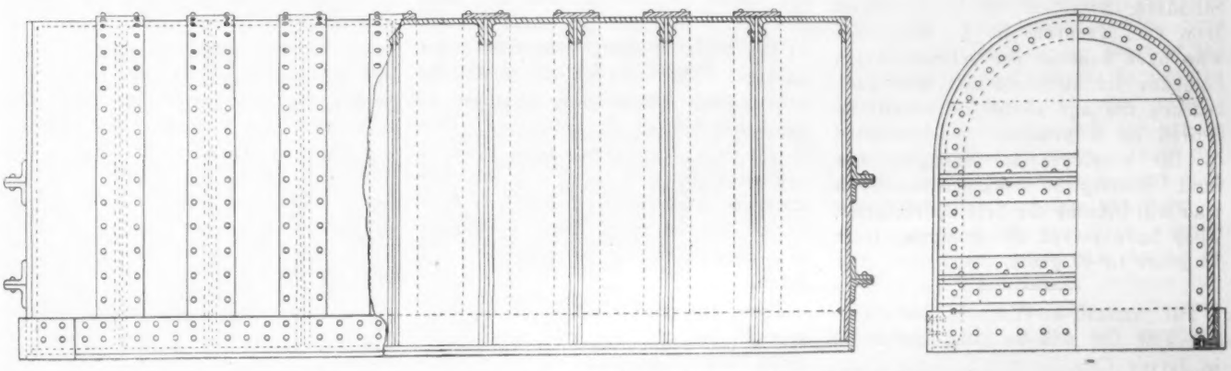


FIG. 3—ELEVATIONS AND SECTIONS OF SEIGH ANNEALING BOX.

plates, iron stair cases, cast iron fences and railings.

As shown in the illustration, the grinding head is direct connected to an electric motor, which together with a heavy outboard bearing, is mounted on a large base moving on ways. The motor has an extended shaft to carry the grinder chuck. The work is stationary, being bolted to the platen in front of the 22-inch emery ring, while the ring rotates and also moves slowly back and forth from end to end of the platen. The reversing is done by a hand lever, when the machine is in use, but automatic stops are provided at each end of the extreme travel, to prevent over travel should the attendant neglect to reverse the feed. The maximum traverse feed of the grinder is ½ inch, and is operated by a hand wheel and miter gear on the splined shaft at the front of the machine. The longitudinal travel of the grinder is obtained from the powerful feed screw shown in the illustration. Attention is called to the fact that the travel, 20 feet per minute, is somewhat faster than might be supposed from the thread of the screw as a triple thread is used. The lead screw is driven by a second motor not shown in the illustration.

The grinder is driven by a standard Westinghouse type "S" compound-wound, direct-current, 10-horsepower, totally enclosed motor, running at 1,100 revolutions per minute. Where required, an alternating-current motor may be supplied in place of the direct-current one. The size of the motor to operate the lead screw is dependent upon the nature of the work to be performed, that is, the amount of metal to be removed.

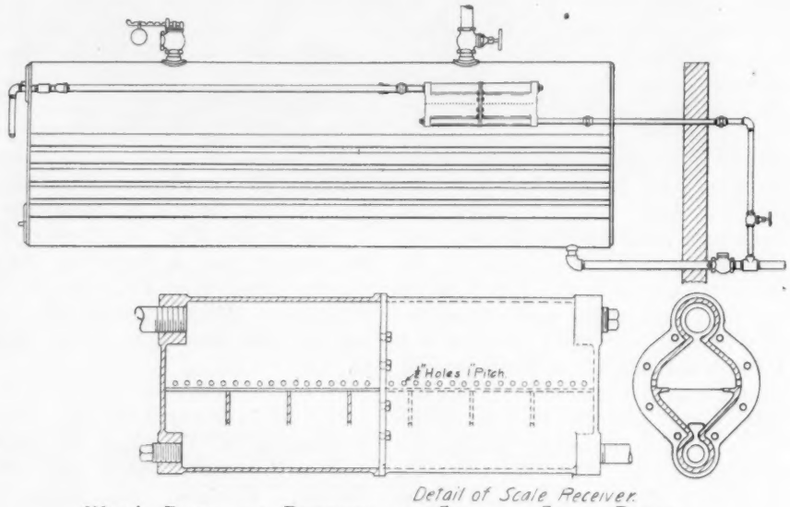
This grinder is a 102-inch face grinder, manufactured by the Diamond Machine Co., of Providence, R. I.

Pensions for Employes.—The establishment of a pension system for employes has been announced by H. C. Stoddard, president of the Trenton Iron Co., Trenton, N. J. Employes who have been in the service of the company for 10 years and who have reached the age of 65 years, will be retired on a pension. A committee of the employes is managing the fund. Among the workmen are seven who will become the first beneficiaries. They have served the company from 10 years to 49 years.

The annual meeting of the Ohio Elevator Co. will be held March 15, in Jersey City.

A DEVICE FOR PREVENTING SCALE IN BOILERS.

The accompanying illustrations show features of a device marketed by John Wood Jr., & Co., 718 Pennsylvania building, Philadelphia, whose object is to remove from boiler water all scale-forming materials before the water is introduced into the boiler. The device consists essentially of a drum of the shape shown in the illustration, which is placed within the boiler at or about the water level. Feed water entering the boiler is introduced first into this drum by means of a preheating coil in the boiler. The water flowing through the coil is raised very nearly to the temperature of the steam, and then is discharged into the drum. In the drum the scale-forming matter contained in the water, which is released at high temperatures, is precipitated and falls to the bottom of the drum, while the water flows out into the boiler through a longitudinal row of holes in the drum, as shown.



WOOD'S DEVICE FOR PREVENTION OF SCALE IN STEAM BOILERS.

The water enters the drum through the upper circular portion and falls through a slot into the main portion of the drum, it being vaporized in its passage. The solid matter settles by gravity into the settling chamber in the lower half of the apparatus. This is of such form that solid matters will naturally find their way into the lower or mud chamber, which is connected to the main drum by means of a slot extending the length of the drum.

From the mud chamber a blow-off pipe is led off, connecting with the main blow-off pipe and closed normally by a valve. This valve is opened at intervals, causing all accumulated scale-forming material to be blown off. In order that the blow-off action may not be confined to any particular locality, the drum is subdivided into a number of spaces by properly arranged divisions, with the result that each section is acted on independently, preventing accumulations in any part of the mud drum. In order that accumulated matter may not be carried out through the feed water discharge holes, two baffle plates are arranged just below the openings through which the water is discharged and at right angles to the natural travel of the current.

Nodulizing Plant.—Plans have been perfected by the Benson Mines Co., and it is expected that a contract will soon be let for the erection of an iron ore nodulizing plant on the company's property at Benson Mines, in northern New York. Approximately $1,000 will be spent in the new improvement. Construction will begin probably April 1, and it is believed that the new plant can be put in operation probably by July 1.

The plant will include a steel structure 50 x 225 feet, which will be equipped with two rotary kilns, each 100 feet long. Four producers will supply the kilns with fuel gas. The plant will have a capacity for nodulizing 400 tons of iron in 24 hours. The kilns are set on an incline, and are fed at the upper end. The fired iron gradually becoming heated, works down the kiln by the combustion of the gas and at a point near the outlet becomes fused. The rotary motion of the kiln breaks the fused mass into nodules.

STEEL FOUNDRY SHRINKAGE PROBLEMS

A Comprehensive Discussion of the Causes of Shrinkage in Steel Castings and Methods of Overcoming This Difficulty

By R. A. Bull.

AMONG the causes most conducive to the perplexities of the modern steel founder, and so requiring his greatest ingenuity, shrinkage is undoubtedly the chief. Nowadays, designs are successfully cast in steel that would have been returned to the engineers not many years ago without an attempt at a cost estimate, but with foot notes briefly declaring their impracticability. In the majority of such cases the question of shrinkage was the negative factor. With the demand yearly increasing for cast steel to supersede structural shapes of many parts, and with competition growing constantly keener, the steel foundryman has learned how to overcome many obstacles, and it is the purpose of this article to explain some shrinkage "shop kinks" that have proven their usefulness, without claiming credit for their origination or their novelty. Some of them will be recognized as old friends by many steel founders, but are none the less useful for that.

Shrinkage in General.

Preliminary to discussing these, it may be well to state a few facts on the subject of steel shrinkage. Varying somewhat with its pouring temperature (usually about 2,800 degrees Fahr.) and with its carbon content, a steel casting of straight form, without projecting flanges, will shrink 5/16 inch per foot. One may almost say that no castings are so designed, and many are of such form that the experience of the patternmaker is the only safe guide as to the proper shrinkage to allow in all sections. Warpage, while a different function, plays considerable part in this, sometimes retarding and occasionally assisting one's efforts. For the principal members of what we may term normally designed steel castings, the average patternmaker will allow 7/32 inch per foot.

Permit me here to digress sufficiently to enjoin upon all purchasers of steel castings that, as far as practicable, they arrange with the steel founder for the manufacture of their patterns, or at least for their construction, if in their own or in a jobbing pattern shop, under the direction of the steel founder, as to allowance for shrinkage and warpage. Without detracting from the credit of the jobbing patternmaker, he cannot be expected to be as fully informed concerning the vagaries of steel shrinkage as is the man who confronts them daily.

There are many causes for these shrinkage variations. Even the individuality of the molder has its effect. A casting from a flask rammed by a floor gang making a large number of molds in a day will shrink less in a mold finished in the early morning than one poured in a mold late in the afternoon. The morning molds are rammed harder, the men being fresh, than those made later, when the workmen are fatigued. This is more noticeable in the hot summer days, thus indirectly making the weather a factor. Of course, the harder the mold, the greater its resistance to the shrinkage of the casting at all sections at angle to the main member.

Improper Arrangement of Flask Bars.

It is economical within reasonable limitations to make special flask bars conforming pretty closely to the lines of the pattern, but the writer has seen castings scrapped for shrinkage cracks or "checks," as they are also called, because of such bars being too close to the cavity of the mold. If the bar is of steel or iron (the former decidedly the preferable, if cast) and there is nothing between it and a vertical member of the casting, horizontally, but a very thin section of hard packed sand, it is a simple matter to account for checks at that or adjacent points, and to correct. One may say that a flask will not go into a well regulated shop in such condition, but such things happen at times in the rush of a hard run plant, and sometimes cause trouble before being noticed.

Effects of Unskilled Gating.

Gating the mold is very important, and if unskillfully done, may be productive of disastrous results. If the casting is so adaptable in its design, the pattern is usually parted near the center and the gate attached on this parting line, this being the most convenient location. If this gate is joined to a section that is heavier than its neighbors, the casting is likely to crack unless special precautions are taken. The heavier the section the longer it remains in a pasty condition after pouring than its surrounding lighter sections, and if to this inherent disadvantage there is added the handicap of improper gating just referred to, the longer it will require to contract and solidify than the surrounding metal, because of the high temperature of the sand mold which takes the stream from the pouring cup during the entire process of teeming. This further reduces the uniformity of cooling already caused by the unevenness of section, and the lighter member freezing more quickly may exert such a pull on its thicker, more fluid neighbor that it may crack the latter, or some point adjacent to the junction of both. The natural remedy is to attach the gate to a thinner member, some distance from any of varying thickness.

Instead of attaching the gate to the mold by a straight sprue, it is often advisable to use a curved one, so that as contraction of the casting takes place, the sprue may be permitted to straighten somewhat, relieving the side pressure of the upright gate against the sand mold.

The gate may cause shrinkage cracks by being placed too close to a flask bar, in much the same fashion as above referred to in connection with the side clearance for bars. There is apt to be the same result from a riser, header or sink-head being so carelessly placed.

Character and Composition of Molds and Cores.

Hard cores are frequently the cause of cracks. The use of coke, sawdust, and other bulky, combustible, compressible materials in the heart of the core is of service here, as is also the selection of some of the various brands of core compounds for use as a binder instead of flour. There are several binders much superior to flour for steel work, causing the core to disintegrate under the high casting temperature and giving the casting an opportunity to contract without impediment. Much fire clay in the core is objectionable. It is not very re-

fractory, and not "peeling" nicely will retard the shrinkage by clinging to the casting. Under many conditions, green sand molds and cores, particularly the former, can be used to better advantage than dry ones, both as to shrinkage and cost. They are undoubtedly great aids to natural shrinkage in that they offer a more yielding surface to the casting as it contracts. If there is too much clay or other non-refractory material in the silica wash commonly used on the surface of cores, the core will not strip nicely. Any such obstruction will increase the scrap from checked castings. The facing sand should bear the same scrutiny as to an excessive amount of non-refractories, in bonds or impurities.

Care should be taken to get the core rods used to stiffen large cores for safe handling, not too long. A careless coremaker employed on piece work may pick up the first handy rod, regardless of its length, sometimes even bending it to make it enter under pressure, and afterwards "slicking" over the end of the core to hide it. If this rod is stiff enough and there is at either end of the core a wall of the metal itself, the casting will probably crack.

Fins as a Cause for Cracks.

Fins are an intermittent source of cracks. They are often found at core joints, and at the union of mold proper with cores. Sometimes they are formed by the core not properly conforming to the core print. It may be too small for the latter. It may produce a fin on the other hand by being too large, requiring the molder to file it down, for sometimes he files it too much. A core may absorb moisture in storage and swell, necessitating reduction in size. Often the box and the print are found to measure correctly, but the core will not conform to the box, due to excessive or inexperienced rapping by the coremaker in releasing the core from the box, or because the box may require repairs, or because of the patternmaker's error in allowing too little draft in the sides of the box. A careful molding foreman will see that his men fill up such spaces that are too great and avoid fins, which if large enough in area and section may cause checks.

Flasks receive considerable rough handling, and even if properly clamped may allow a fin to form at the parting line large enough to cause trouble. Such a fin may do no harm in retarding shrinkage if the cope is raised slightly soon after pouring to prevent the fin from pinching the casting proper as it contracts.

Unskillful pouring will, of course, form fins if the ladle man is careless in regulating the pressure of the molten steel on the mold.

Sharp Corners.

Sharp corners are a frequent cause of shrinkage cracks. The only safe method of taking care of them is by their elimination, if one may speak paradoxically. Ample fillets should be provided at all intersections of members. Careful observers have seen service failures caused by this fault without any apparent indications of tears when the castings were shipped. The writer has purposely broken castings at sharp-cornered intersections in which there were no surface imperfections. On fracture, hot cracks were made plain, sufficient to have caused complete rupture in service.

Non-Uniformity of Sections.

Uniformity of section is a frequent source of shrinkage troubles, and with this, as with sharp corners, the designer has much to do. It is unfortunately not always possible for the engineer to provide for uniform thickness of members, although he well knows it is desirable. Here we arrive at a more serious problem than that due to sharp corners, for in the latter contingency, cracking strips or fillets may be cast, even if they must later be chipped off in the cleaning room. Not infrequently, chills of iron or steel of varying area and thickness to be adjusted by conditions, are advantageous to use in cooling the thicker member at a more rapid rate than its adjoining thin section. It is sometimes advisable to retard the cooling of the thinner member by forming both of its surfaces with thick dry cores, and to employ a green sand mold or green cores for assisting the chill-plate in making the heavy section. Water jacketed molds are sometimes used for this purpose, but for general use they are too costly. By resorting to these expedients it may be possible to cool both thin and thick sections with a fair degree of uniformity. At a right-angled intersection of light and heavy member, a chill-rod is often useful. This may be imbedded in mold proper or secured in the core and forms an attractive fillet.

It is well to bear in mind that the absence of a surface crack at the junction of light and heavy sections does not always mean safe crossing of the bridge between them. On fracture of such a casting for examination, a shrink hole may be found that would seriously detract from its strength. This may be overcome by additional risers, suitably placed, so that the thin member may feed from them, rather than their thick, permanent neighbors. It is sometimes extremely difficult to provide such risers, and the seat of the trouble—the drafting room—is, if conditions permit, the proper place to overcome this difficulty. This, of course, has reference to pronounced variations, though purely from a founding standpoint, to be theoretically perfect in design, a casting should have all of its sections of the same thickness.

Precautions in Casting Widely Separated, Deep Members.

The steel founder is at times called upon to produce a casting covering a large area, of comparatively light weight, consisting, for example, of several rows of deep parallel members, with auxiliary members intersecting, all being spaced widely apart. To provide for natural contraction is the principal problem facing the foundryman. If the design be of such a nature that the mold can be made without a cope, but with covering "cores" (improperly so-called, for want of a term better descriptive), the task is simplified. In any case, it is of great benefit, from the view-point of shrinkage, to ram up in the mold large wood boxes with eye-bolts or similar attachments secured to the tops of the sides. These filler-boxes, as we may call them, are, of course, placed where there is the greatest mold area not forming the casting, or in other words, in the open spaces between the members. They should be left open at the top, and filled with heap-sand, in open-hearth practice, to avoid straining the mold in bottom-pouring. Their sides should be tapered to enable easy removal, and they should be drawn very soon after the mold is poured. The cavities thus left in the mold will greatly relieve the obstruction of the latter to the free contraction of the solidifying casting. In molding practice with covering cores, without the use of a cope, the desired quick removal of the filler-boxes is more easily effected than with the regulation cope and drag method, for the clamps or binders holding the covering cores in position may be stripped off without difficulty, and the

boxes exposed and withdrawn without affecting the casting. But it is not often practicable to lift the cope of a recently poured mold. The casting may hang in the cope, at one or several points and be badly bent. Obviously, there are two recourses, in the cope and drag method, either to ram up something similar to wood blocks of suitable size to be withdrawn between the cope flask-bars, or to provide for an open space in the cope flask sufficient to take the desired filler-box, in either case removing boxes or blocks without disturbing the position of the cope.

Cracks at Intersections.

At all intersections of long deep members, particularly those at right angles to each other, a very narrow oblong cored hole is often found of great advantage in producing a sound casting of good appearance. In spite of all precautions, the foundryman may not be able to prevent checks at some intersections without the use of cracking strips, costly in removal and detrimental in appearance, even after they are chipped off. Coring a small hole at the intersection will in many cases make cracking strips superfluous and the casting stronger by relieving the strain, which sometimes produces an interior tear, while the skin of the metal is left intact. Frequently a casting would be strengthened by such apparent weakening.

Where conditions prohibit coring these holes, tie-rods are sometimes as efficacious as cracking strips, and are less expensive in the finishing department, and less unsightly in their effect on the casting. They are of small diameter iron or steel, bent at each end, imbedded in the mold or core by these ends at right angle to the check they are to prevent, the horizontal portion being covered by the molten metal and thus fusing to and becoming a part of that portion of the casting which is susceptible to cracks.

Composition of the Metal.

Finally, as all know, cracks are caused by an excess of phosphorus or sulphur. No further comment on this well-known fact is necessary. But sometimes the analysis will be normal, and shrinkage cracks appear in the castings without any apparent cause therefor, either in design or shop practice. In some such cases there may be an overdose of a poor distribution of aluminum wire, used in the pouring cup. A surplus of this metal will produce unnatural shrinkage. In some foundries this metal is tossed into the ladle at tapping time and is thus given a better distribution through the metal than sometimes when a careless workman feeds the rod aluminum to the stream entering the pouring cup, "steady by jerks." Or on investigation it may be found that the preliminary determinations of phosphorus were high, generally caused by high phosphorus melting stock, but sometimes due to unclean pit scrap mixed with too much slag carrying high phosphorus, as it frequently does in basic practice. Whenever these preliminary analyses show an abnormally high phosphorus content, even though this objectionable element may gradually be "worked down" to normal, there is liability of trouble with cracks on castings at all susceptible to them. Many observers believe this often due to oxidation, as does the writer. In any event, care in getting the pit and cup scrap well cleaned is greatly worth while. The selection of low phosphorus and low sulphur pig iron and melting scrap, even moderately low in basic practice, is advisable, and will reduce the percentage of checked castings.

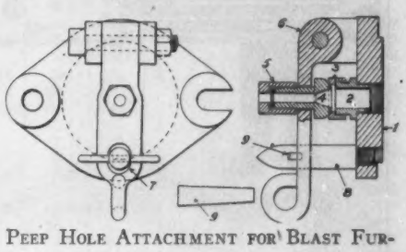
Nitrogen.

Recently it has been discovered that certain elements not ordinarily determined, nitrogen conspicuously, are troublesome factors in steel making, and that some of them cause cracked castings among other troubles. While the writer is not aware of anything more than rather general and embryonic data, so to speak, regarding these elements and their antidotes, as affecting steel foundry practice, it seems clear that the investigators are working along the right lines and that it will not be long before we will know more, thanks to them, than we do now. Certainly, the five usual determinations taken in chemical analysis, the physical tests ordinarily made, and the intelligent use of the microscope and the camera do not tell us all we wish to know about our most valuable metal. Equally certain it is that such eminent metallurgists as Howe, Campbell, Stoughton, and others, will continue to add to our stock of knowledge, as they have done in the past to such inestimable benefit, and that they will be aided in no small degree by the practical men in the shop, many of them less favored than these scientists who have always gratefully received and gracefully acknowledged such assistance.

A PEEP HOLE ATTACHMENT FOR BLAST FURNACES.

The accompanying illustration shows a peep hole attachment for blast furnaces, which is the invention of A. L. Smith, of the furnace department of the Jones & Laughlin Steel Co., Pittsburg. The attachment is in use on the Eliza furnaces of the Jones & Laughlin Co., and on the Edith and Neville Island and McKeesport furnaces of the Steel Corporation.

The device comprises essentially a tuyere cap 1 to be secured to the tuyere stock of the furnace in any suitable manner. This cap is provided with a threaded opening, in which is placed a bushing 2, the bushing being threaded at either end and with a hexagonal-shaped flange in the middle for the accommodation of a wrench. A seat 3 is secured on the external end of the bushing 2, whose upper face is provided with a dish-shaped depression, which is engaged by the rounded head of the plug 4. The bushing, seat and plug are each provided with a central hole, which



PEEP HOLE ATTACHMENT FOR BLAST FURNACES.

form a continuous passageway when the parts are in operative position to permit the inspection of the interior of the tuyere. The opening of the seat 3 is larger than that of the bushing 2, in order that a plug may be placed in the latter when it is necessary to remove the seat for replacement or other purposes. The bore of the plug is for the greater portion of its length somewhat constricted, but it flares outward at the point where it enters the head and at that point is of the same diameter as the bore of the seat, or somewhat larger. The constriction of the bore of the plug reduces the pressure on the eyesight glass, and precludes the entrance of dust or slag into its shank, which would obscure the eyesight glass. The eyesight glass is fastened between the end of the shank of the plug 4 and the cap 5, which is secured over it, the glass itself being placed between two asbestos rings.

A shackle 6 is hinged between two ears carried on the tuyere cap 5, and carries the plug 4, together with

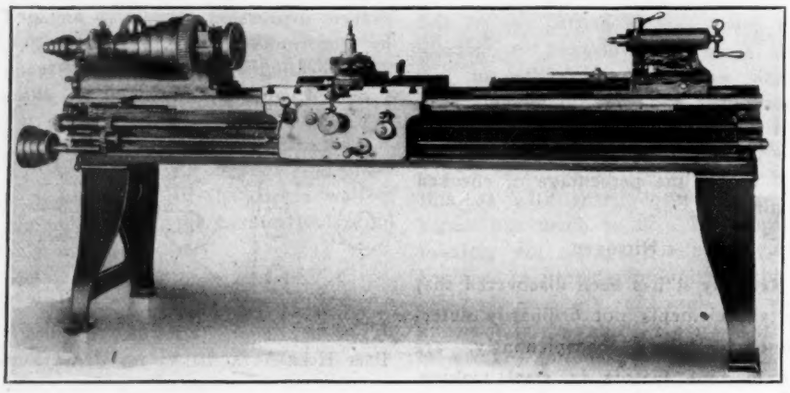
its cap 5, as shown in the illustration. A slot 7 is formed in the shackle, which fits over a pin 8 secured in the lower portion of the tuyere cap. A wedge-shaped plug 9 is driven through a hole in the pin 8 and causes the shackle to draw the plug 4 up against the cap seat 3, making a gas-tight joint.

The advantages claimed for this form of peep hole are that when the seat becomes worn from the pricking-rod employed for cleaning out the tuyeres, slight expense and loss of time results and no stoppage of the furnace is necessary to remove the seat and replace it with a new one. When it is necessary to provide a new seat for the one that is worn, the plug is thrown out of engagement therewith and the bushing is closed with any suitable material while a new seat is being supplied. The threads of the bushing are quick-setting, in order that no unnecessary time will be lost in replacing the seat. It is stated that the device is giving good satisfaction on all of the furnaces on which it is employed.

Furnace Coke Differential.—Copper smelting companies have filed with the Interstate Commerce Commission complaints against railroads, alleging discrimination in the rates for transporting coke from eastern coke regions to Texas and Arizona smelters. The old question of differential to blast furnaces is involved. Copper companies declare that when coke is used for smelting iron, the rate from West Virginia to Chicago is $2.35 a ton, but for copper smelting the rate is $2.65 a ton. Practically all the coke used by the southwestern smelters is shipped via Chicago. The rate beyond Chicago is satisfactory, complaint being lodged against the haulage rate to that point.

A NEW ENGINE LATHE.

The Miami Valley Tool Co., Dayton, O., is placing on the market a 15-inch standard engine lathe, which will have a swing over the bed of 16½ inches, and weighs, approximately, 1,600 pounds with a 6-foot bed. The machine is shown in the accompanying illustration. In general features, the design of the lathe follows standard practice, having a tailstock of the overhanging and set over design, which will allow the compound rest to be worked at right angles. It is driven by a 5-step cone pulley and has a back gear ratio of 9.6 to 1. The carriage is T-slotted, with exceptionally long bearings, and is gibbed both front and back. A chasing dial is provided for cutting all threads without stopping or reversing the lathe. The range in thread cutting is from 5 to 40 per inch, including 11½ pipe thread. The feeds are reversible in both the apron and head, and it is impossible to throw in both screw and feed rod at the same time. The feed is positively geared, and there are also four belt feeds, ranging from 50 to 150 cuts per inch. The lathe has been particularly designed for automobile garage and general repair shop work in addition for use as a manufacturing machine.



MIAMI VALLEY 15½-INCH ENGINE LATHE.

At the annual meeting of the Scullin-Gallagher Iron & Steel Co., St. Louis, recently, D. R. Francis was chosen to the board to succeed W. J. McBride, and these officers were re-elected: Chairman of the board, John Scullin; president, Harry Scullin; vice presidents, T. M. Gallagher and R. H. Weatherby; secretary and treasurer, C. V. Turner. Directors: E. S. Robert, W. W. Pettis, Charles Gilbert, Festus J. Wade, together with the officers named.

BLAST FURNACE NOTES.

No. 2 Ensley stack of the Tennessee Coal, Iron & Railroad Co. was blown out Jan. 19.

Colbrook No. 2 of the Lackawanna Steel Co. was lighted Jan. 19, by Miss Elizabeth Hall. The furnace had been idle for almost two years.

Furnace A of the Tonawanda Iron & Steel Co., was blown in Jan. 2.

One stack of Isabella furnace was the only additional stack of the Carnegie Steel Co. blown in during January.

The Marshall, Pa., furnace of the Juniata Furnace & Foundry Co., Newport, Pa., was lighted Jan. 1.

The new Rebecca stack of the Kittaning Iron & Steel Co. was lighted on the morning of Jan. 4 and the blast applied the following morning.

No. 2 furnace of the Pennsylvania Steel Co., at Steelton was lighted Jan. 6; Lochiel stack was lighted Feb. 3.

The Rockdale Iron Co.'s stack at Rockdale, Tenn., ran on ferro phosphorus during the month of January.

Covington, Va., stack of the Low Moor Iron Co., was blown in Jan. 10.

Goodrich, Tenn., stack of the Standard Iron Co., broke all records for output during the month of January.

Haselton, O., No. 2 stack of the Republic Iron & Steel Co. was lighted Feb. 9, after being relined.

Cambria Steel Co.'s No. 6 stack was blown in Jan. 30, after being idle for more than a year.

The Goshen furnace of the Goshen Iron Co., Goshen, Va., was planned to blown in on Feb. 10.

The rebuilt Scottdale, Pa., stock of Corrigan, McKinney & Co. was lighted Jan. 18 by Miss Phoebe Everhart, daughter of Supt. W. H. Everhart.

Three blast furnaces at Gary, Ind., each with a monthly capacity of about 13,500 tons, are now in operation, the latest, No. 10, being blown in Jan. 27. South Chicago furnace E blows in this week. The Corporation's active blast furnace capacity is now in excess of 57 per cent of normal, and in this figuring four of the new Gary stacks are counted as in shape for operation.

No. 6 Ohio stack of the Carnegie Steel Co. was lighted for the first time Feb. 10. This leaves only one of the new stacks of the Ohio plant dark.

Shortly after blowing in Jan. 31, an explosion occurred at the stack of the Hanging Rock Iron Co., Hanging Rock, O. The explosion badly damaged the downcomer and dropped the bell back into the furnace. It is believed that repairs will be completed in time to blow the stack in some time this week.

Price Cut Causes Industrial Slump.

The important happening in the stock market last week was, of course, the slump in the general industrial share list, hinging upon the announcement by the larger steel producing interests officially of price recessions in several lines of finished material. At the same time railroad stocks did not decline anywhere nearly as sharply, it being argued that the probable increase of the volume of freight traffic resulting from lower priced steel will mean increased earnings by the railroads.

The market opened strong on Monday, more especially for the railroad issues. Denial was made of rumors of an impending cut in iron and steel prices. Tuesday prices were reactionary and closed lower, steel price cutting rumors still being denied. The Imperial Bank of Germany reduced its discount rate from 4 to 3½ per cent, the first change in that rate since last June. Wednesday was the dullest day in months, and with few exceptions, prices were weak and lower. Reductions in prices of copper metal depressed the copper share market. London became a seller of American securities in considerable quantities. The decline of United States Steel common Thursday to 49⅝ unsettled the entire market, and it closed lower and weak. Friday's announcement by Judge Gary of official concessions on prices of iron and steel products caused further weakness, and Steel common reached 48. Saturday's market was active and weak, closing at the lowest prices, and with iron and steel stocks breaking from two to six points.

A somewhat easier tendency prevailed in the money markets for the week, call money ranging from 1¾ and 2½ per cent, and time money being quiet. Further engagement of gold to the amount of $700,000 for shipment to South America was made, making the total gold covered by the present export movement $11,000,000. The bank statement made a favorable showing, including an increase of $4,047,275 in surplus reserve, and a decrease of $6,985,300 in loans. The actual report of clearing house banks showed loans decreased $5,174,600; deposits decreased $771,400; surplus increased $5,438,350, and the percentage of actual reserve 26.19, compared with 25.78 the previous week. Non-member banks and trust companies reported loans decreased $2,874,700; net deposits decreased $434,400, and the percentage of reserve 18.4, an increase of 0.3. The bank clearances for the week showed an increase in the aggregate, but little or no gain in the actual volume as compared with the previous week. Commercial failures for the week were 278, compared with 222 the previous week and 394 the corresponding week last year. Shares were sold to the number of 3,439,860, compared with 1,496,239 the previous week and 2,472,597 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $29,899,000, compared with $23,030,000 the previous week and $9,509,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 72⅝, a net loss of 4⅞.

Boston.—Butte Coalition closed 23⅛, a net loss of 1⅝; Calumet & Arizona closed 101, a net loss of 3½; Calumet & Hecla closed 640, a net loss of 15; North Butte Mining closed 69½, a net loss of 6¾; Quincy Mining closed 90, a net loss of 2.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Feb. 20	Changes in Week	Date 1909 Ann. M't'g.	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	14¼	— ⅜	Sept. 2	$19,820,000		.....	.....
Allis-Chalmers pr	45⅜	—3⅛		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	8	— ⅜	Feb. 2	41,233,300		.....	.....
Am. Can pr	74¾	— ½		41,233,300	7 cum	1¼ Q.	Jan., 1909
Am. Car & Foundry	46½	—4	June 24	30,000,000		½ Q.	Jan., 1909
Am. Car & Fdy pr	110⅜	— ⅝		30,000,000	7 n. c.	1¾ Q.	Jan., 1909
American Loc	51	—4⅝	Oct. 19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc. pr	112	.....		25,000,000	7 cum	1¾ Q.	Jan., 1909
American Ship	58	.....	Oct. 13	7,600,000	4	1 Q.	June, 1908
American Ship pr	105	+ ⅜		7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries (new)	36⅛	+ ⅛	Dec. 2	17,184,000		.....	.....
Am. Steel Foundries, pr	47½	.....		17,240,000	6 cum	1	Aug., 1904
Barney & Smith	40	— 4	June 1	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr	95	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	22	—3¼	April 6	14,862,000		.....	.....
Bethlehem Steel, pr	49½	—2⅜		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	35⅛	—2⅝	March 16	45,000,000*	6	1½ S. A.	Feb., 1909
Cambria Iron	46	.....		8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	25	— ½	Feb. 15	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	31½	—8⅜	Oct. 18	34,235,500		3½	April, 1902
Crucible Steel	7½	— ½	Oct. 20	24,578,400		.....	.....
Crucible Steel, pr	59	—3¾		24,436,500	7 cum	1 Q.	Dec., 1907
Empire Steel	6	.....	April 27	1,254,770		.....	.....
Empire Steel, pr	47	.....		2,500,000	6 cum	1½ S. A.	Jan., 1909
Fay & Egan	100	.....	Feb. 18	1,000,000	6 cum	1¾ Q.	Nov., 1908
Fay & Egan, pr	100	.....		1,000,000	7 cum	1¾ Q.	Nov., 1908
General Electric	152½	—4	May 11	65,178,800	8	2 Q.	Jan., 1909
Harbison-Walker	17	.....	Jan. 18	18,000,000		½	Oct., 1907
Harbison-Walker, pr	82	—2		9,600,000	6 cum	1½ Q.	Jan., 1909
International Pump	37	—1⅞	June 8	17,762,500		½	April, 1903
International Pump, pr	84⅜	— ¼		11,350,000	6 cum	1½ Q.	Feb., 1909
Lackawanna Steel	40	.....	March 10	34,971,400		.....	.....
Lake Sup. Corp	19	+1⅛	Oct. 6	40,000,000		.....	.....
New York Air Brake	85	—2⅞	June 17	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	100	.....	Feb. 3	8,500,000	6	1½ Q.	Mar., 1909
Niles-Bement-Pond, pr	100	.....		2,000,000	6 cum	1½ Q.	Feb., 1909
Otis Elevator Co	50	.....	March 15	6,375,300		1½ S. A.	April, 1908
Otis Elevator Co., pr	94½	.....		6,295,000	6 n. c.	1½ Q.	Jan., 1909
Penn. Steel	50	.....	May 10	10,750,000		.....	.....
Penn. Steel, pr	103½	— ½		16,500,000	7 n. c.	3½ S. A.	Nov., 1908
Pittsburg Coal Co	12¼	.....	March 9	28,104,600		.....	Nov., 1906
Pittsburg Coal Co., pr	45½	.....		27,071,800	7 c.	1¾	April, 1905
Pressed Steel Car	34	—7¼	Feb. 17	12,500,000		3	Aug., 1904
Pressed Steel Car, pr	98	—4½		12,500,000	7 n. c.	1¾ Q.	Feb., 1909
Pullman	171½	+ ½	Nov. 10	100,000,000	8	2 Q.	Feb., 1909
Railway Stl. Spring	42½	—4½	March 4	13,500,000	4	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	100	—1		13,500,000	7 cum	1¾ Q.	Dec., 1908
Rep. Iron & Steel	18¼	—5¾	Oct. 20	27,191,000		.....	.....
Rep. Iron & Steel, pr	75½	—10¼		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	71¼	—8⅜	March 10	10,000,000	5	1¼ Q.	Mar., 1909
Sloss-Sheffield, pr	107⅜	—3⅝		6,700,000	7 n. c.	1¾ Q.	Jan., 1909
U. S. Pipe & Fdy	26½	—1½	June 23	12,500,000	4	½ Q.	Dec., 1907
U. S. Pipe & Fdy., pr	73	—2		12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	46	—6⅝	April 19	508,302,500	2 n. c.	½ Q.	Mar., 1909
U. S. Steel, pr	109⅝	—3⅞		360,281,100	7 cum	1¾ Q.	Mar., 1909
U. S. Steel 5s	104	— ⅛		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	59	—1	Sept. 21	9,073,680		.....	.....
Westinghouse Elec	79¾	—2½	June 16	27,173,200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	111¾	+ ¼	Oct. 5	14,000,000*		2½ Q.	Jan., 1909

Par value of shares, $100, except those starred (*), $50.

Financial Notes.

The Quincy Mining Co. declared the usual quarterly dividend of $1 a share, payable March 22; Calumet & Hecla declared the regular quarterly dividend of $5 a share, payable March 19; North Butte Mining Co. declared the regular quarterly dividend of $1 a share, payable March 27.

NEWS FROM MANY INDUSTRIES

New Buyers:—

The United States Automatic Co., Amherst, O., has been incorporated by William A. Schibley, E. H. Nicholl, J. Wersbecher, J. Baus and A. K. Jenns, with $50,000 capital stock.

The Ben Hur Truck Co. Ltd., of Hamilton, Ont., capital $20,000, has been incorporated by Francis R. Close, H. J. Henderson, Henry E. Ralston and others.

The Kansas City Foundry Co., Kansas City, Mo., capitalized at $3,000, has these incorporators: John E. Loewer, F. A. Raynor, Charles A. Summers and others.

The Pilot Heater Co., Lorain, O., has been incorporated with $10,000 capital stock. Those interested are H. W. Pilot, Robert Farren, C. T. Clark, E. F. Harlan and H. W. Smith.

The Standard Steel Co., Cleveland, O., has incorporated with $40,000 capital stock and has these incorporators: T. G. Williams, R. E. Curtis, I. A. Oshorn, C. R. Williams and G. A. Curtis.

The Penn Foundry Co. Johnstown, Pa., has been chartered with $15,000 capital stock, by Treasurer George W. Thomas. The other directors are Joseph G. Thomas and William G. Rodgers, all of Johnstown, Pa.

A charter has been granted to the Sharon Scale Truck Co., with a capital stock of $50,000. The incorporators are: Albert H. Gage, Toledo, O.; Clate B. Vinton and John W. Kagarise, both of Sharon, Pa.

William J. Watt, George E. Phillips and Hugh J. Leas, with others of Woodstock, Ont., have incorporated the Watt Hose & Pipe Coupling Mfg. Co. Ltd., with an authorized capital of $100,000.

The Hespeler Machinery Co., Ltd., has been incorporated with $100,000 capital and head office at Hespeler, Ont., the provisional directors being Walter G. Chater, William F. Campbell, and M. A. LeCord.

The William P. Collins Co., Queens, N. Y., iron work, has been incorporated by William P. Collins, Mamie A. Collins, Hempstead, L. I., and Joseph N. Jones, Long Island, N. Y. The capital stock is $25,000.

The Huntsville Engine Works Co., Ltd., has been incorporated with $40,000 capital stock and head office at Huntsville, Ont. John Youngson, James E. Readman and James H. Hutchinson are the provisional directors.

The Powers Railway Safety Appliance Co., New York city, has been granted articles of incorporation to manufacture railway appliances and mill supplies, with $30,000 capital stock. The incorporators are: Vance S. Manson and Edward A. Sprong, No. 1 Broadway; and Samuel S. Ryckman, 538 West 185th street, all of New York city.

Articles of incorporation have been filed by the Akron Automatic Hot Water Heater Co., Akron, O., through C. A. Ley, J. W. Meeker, W. W. McIntosh, C. A. Teits and J. L. Reid. The capital stock of the company is $10,000.

Application for a charter has been made by the Parlin & Orendorf Northwest Plow Co., Canton, Ill. The company is capitalized at $100,000, and has these incorporators: U. G. Orendorff, L. H. Gillet and W. E. McFarland.

Articles of incorporation have been filed by the Diamond Engine Co., with $25,000 capital stock, at Des Moines, Ia. The officers are: John T. Hume, president; George E. Brammer, vice president; A. J. Orlander, secretary and treasurer.

The Whalen Lock Co., Jersey City, N. J., to manufacture locks etc., with a capital stock of $100,000, has been incorporated by Henry W. Partridge, 295 Johnson avenue, Jersey City, N. J.; John T. Whalen, 166 Smith street, Brooklyn; and Albert I. Drayton, 15 Exchange Place, Jersey City, N. J.

The Schoonmaker Mechanical Motor Power Co., New York City, general manufacturing, with $200,000 capital stock, has been incorporated by: Elmer Schoonmaker, 1232 Hoe avenue; Charles H. Bausher, 1370 Franklin avenue; and Stephen G. Stil, 1446 Minford place, all of the Bronx, New York City.

The Gordon Bros. Iron Works, Brooklyn, N. Y., has been incorporated to manufacture iron and materials of iron and other metals, with a capital of $50,000. Those interested include Abraham Gordon, Samuel Gordon and Max Greenberg, 1046 Myrtle avenue, Brooklyn.

The Hawkridge Bros. Co., Boston, Mass., has filed application for a charter to deal in iron, steel and other metals with a capital of $300,000. The officers are: President, Edwin Hawkridge; treasurer, John F. Hawkridge; clerk, Joseph C. Clapp, all of 303 Congress street, Boston, Mass.

The Millinocket Foundry & Machine Co., Millinocket, Me., has filed application for a charter to do foundry and machine shop business, with $10,000 capital. The officers named are: T. J. Corrigan, president; J. W. Corrigan, treasurer, and E. J. Corrigan, clerk, all of Millinocket.

Articles of incorporation have been filed by the Valley Boat & Engine Co., Baldwinsville, N. Y., to manufacture gasoline motors or engines, electric motors, etc., with a capital of $20,000. The charter members are Dwight S. Simpson, Reed H. Hubbell and Josiah Tallmadge, Baldwinsville, N. Y.

The Hydrostatic Machinery Co., Rochester, N. Y., has been granted a certificate of incorporation to manufacture supplies for manufacturers, builders, plumbers and steamfitters, with $50,000 capital. The incorporators are: Louis J. Ernst, Adolph M. Spiehler and Clarence Wheeler, Rochester, N. Y.

The Perth Amboy Hardware Co., Perth Amboy, N. J., has been chartered to manufacture hardware and building material, with a capital of $100,000. Those interested are South R. Farrington, Perth Amboy, N. J.; Maud P. Madsen, 201 West Ninety-fourth street, and Franz Neilson, 80 Wall street, New York City.

New Construction.—

William Horn, of Maurice, La., is building an up-to-date machine shop in the west end of Abbeville, La.

The National Enameling & Stamping Co. has contracted for a two story warehouse at Granite City, Ill., 60 x 203 feet, to cost $20,000.

The Powers Foundry Co., Elkton, Pa., is planning the construction of a steel casting plant with a capacity of about 20 tons of castings per day.

Plans are being prepared for a one-story addition, 25 x 80 feet, to the shops of the International Nut Co., at Cayuna avenue and Twenty-fourth street, Niagara Falls, N. Y.

The Carbondale Machine Co., Simpson, Pa., has opened a foundry in connection with its machine shop owing to a large increase in business. The foundry is equipped with all modern facilities.

The Whitaker-Glessner Co. is completing a steel structure to cover the Martins Ferry, O., shovel works department, which will permit the operation of a heavy crane through to the railroad siding.

The Waterloo Gas Engine Co., Waterloo, Ia., advises that it is at work on the foundations of a new building 120 x 140 feet, which it is erecting on additional ground bought recently for $14,000. An addition 80 x 220

feet is being made to the foundry, thus making the total foundry floor space 80 x 300 feet. It has recently installed about $12,000 worth of modern machinery, and it is expected with this equipment to turn out at least 50 finished engines per day. In one week recently the company received 201 orders for engines alone. It has recently increased its capital from $66,000 to $200,000.

W. H. Penman has purchased land near the plant of the Beaumont Iron Works, Tex., upon which he will install the W. H. Penman Boiler & Tank Works. Building operations will begin shortly.

The Canton Drop Forging & Mfg. Co., Canton, O., has built a 30-foot addition to its forging room, and is just installing a 3,000-pound steam drop hammer made by the Alliance Machine Co., Alliance, O.

The Erie Forge Co., Erie, Pa., has awarded to the Pittsburg Bridge & Iron Co., Rochester, Pa., the contract for erecting three buildings, 35 x 128 feet, 60 x 94 feet, and 19 x 60 feet, all to cost $50,000.

The chamber of commerce of Youngstown, O., has purchased in the western part of the city a site for a branch works of the Corrugated Bar Co., of St. Louis. The plant will be near the lower works of the Carnegie Steel Co.

The Salt Lake railroad will begin shortly the erection of general machine and repair shops at Las Vegas, Nevada, upon which probably $300,000 will be spent on the buildings and $200,000 on machinery and equipment.

Improvements on the car shops of the Wheeling & Lake Erie, at Ironville, O., have been started, including additions to present buildings and installing new machinery. It is estimated that $175,000 will be expended on these improvements.

According to present plans, ground will be broken not later than May 1 for the plant of the Automatic Roller Bearing Co., Goshen, Ind. The structure is to be of brick and steel, with an aggregate floor space of at least 20,000 square feet.

The Spargo Wire Cloth Co., Rome, N. Y., has awarded the contract for a new building, 100 x 200 feet, to be of steel and concrete. Work will be commenced as soon as the weather will permit. The contract calls for the completion of the building by Aug. 1.

The Hawkins & Barne Machine Co., Trinidad, Colo., has been issued a building permit for the erection of a machine and blacksmith shop to cost probably $8,000. The foundations and brick work are now being put in. The machine shop will be 50 x 150 feet, and the blacksmith shop 25 x 50 feet. The new equipment ordered includes a steam hammer to cost $5,000. Compressed air will be used on all machines. It is planned that the buildings will be ready for occupancy April 1.

The Anderson Pattern Works, Moline, Ill., has recently added a boat building department with the intention of specially building motor boats. In addition, the company manufactures a complete line of marine gasoline motor boats of high speed and heavy duty types.

The plant of the American Sintering Co., near Hubbard, O., has begun improvements to be made at a cost of about $50,000. The enlargement of the plant is necessitated by the greatly increased business, owing to the success attained by its process of solidifying flue dust.

The Industrial Works, Bay City, Mich., builder of locomotives, pile drivers, transfer tables, etc., advises respecting its new foundry that while the building is in a partial state of completion, yet it has not been definitely settled as to just when the equipment will be put in.

General Industrial Notes:—

The Union Metal Post Co., Canton, O., has changed its name to the Union Metal Mfg. Co.

The Kings County Iron Foundry, of Brooklyn, has increased the number of its directors from four to five.

In line with its recent change of ownership, the New York State Steel Co. has increased its capital from $2,000,000 to $3,500,000.

The buildings of the abandoned plant of the National Tube Co., at Youngstown, O., have been sold to Charles Huster of that city, who is wrecking the works.

The Independent Die Co. of Massachusetts, with a home capital of $85,000, has been authorized to do business in St. Louis with $2,125 of its capital.

The Sloss-Sheffield Steel & Iron Co. advises that its recent fire was confined to the blacksmith shop of its City furnace, and there will be no extensive repairs.

The Oklahoma Steel Post Co., Enid, Okla., organized with John C. Moore as president, and J. S. Kennefick as secretary, to manufacture steel fence posts and broom corn seeders. The company is capitalized at $35,000 and is planning to erect a plant in Enid shortly. The directorate includes Mr. Moore, Mr. Kennefick, T. K. Berry, of Enid, and J. W. Courtney, of Ringman, Okla.

The Sharpe Machine Tool Co., Toledo, O., has been placed in the hands of Charles W. Boshong, as receiver, in order to enable it to complete several thousand dollars worth of contracts.

The Side-Weight Horseshoe Co., Hartford, Conn., advises that its recent fire was confined to the forge room and the damage to the interior wood work has been repaired by local contractors.

The Newport Foundry Co., Newport, Ky., at its annual meeting, heard reports on a substantially prosperous year, and chose these officers: President, Paul Lindholz; secretary, Frank L. Gamel, and treasurer, H. E. Weber.

The Massey-Harris Co., Ltd., Toronto, Ont., advises that its recent increase of $2,000,000 in capital has been found necessary to be in keeping with its growing volume of business, and not for special additions to the plant.

The Expanded Metal & Corrugated Bar Co., St. Louis, has simplified its name and will hereafter be known as the Corrugated Bar Co., and is located in its new offices, suite 1410 to 1419 National Bank of Commerce building, St. Louis.

August Malmsten, of the Atlas Iron Works Co., Minneapolis, has filed a voluntary petition in bankruptcy, showing total assets of $42,981 and liabilities of $15,458.15. Exemptions are claimed for over $10,000 worth of property by Malmsten.

At the annual meeting of the Elk Rapids Iron Co., Elk Rapids, Mich., these directors were elected: Lincoln Brown, Evanston, Ill.; Benjamin Carpenter, Winetka, Ill.; Kellogg Fairbanks, Livingston, and Dexter Fairbanks, Chicago, Ill. Officers will be elected later.

Through an order of court, Receivers Farnsworth and Hotchkiss have been given authority to sell the New Haven, Conn., plant of the National Steel Foundry Co. The foundry was originally included in the receivership of the National Steel & Wire Co., some time ago.

The stockholders of the New Castle Forge & Bolt Co., New Castle, Pa., recently voted an increase in capital stock from $300,000 to $450,000, to provide for substantial improvements. These directors were elected: George Green, Edward Beadel, George L. Patterson, J. Norman Martin, Charles

J. Kirk, Thomas Morehead and Rufus Patterson. They will elect officers later.

The Lebanon Valley Iron Co., Lebanon, Pa., has re-elected the following officers and directors: President, H. H. Light; secretary, William S. Davis; treasurer, S. P. Light; Samuel L. Light, J. Warren Light and Eli Attwood, of Lebanon, and W. W. Light, of Reading, Pa.

The Oostburg Steel Foundry Co., Oostburg, Wis., at its annual meeting elected these officers and directors: President, W. Sprangers; vice president, P. Daane; secretary and treasurer, J. A. Zurmond; Henry Siebelink, J. H. Nyenhuis, Jacob Daane and W. D. Te Ronde.

The Washington Pipe & Foundry Co. has amended its articles of incorporation changing its place of business from Spokane to Tacoma, Wash. The company has these officers: President, George H. Long; vice president, W. E. Russell; secretary and treasurer, T. R. E. Berry.

The Falcon Bronze Co., Youngstown, O., has re-elected these officers: President, G. A. Doeright; vice president, Thomas Parrock; secretary, Joseph G. Haney; treasurer, E. E. Miller; superintendent, R. G. Doeright, who, together with C. H. Kennedy, constitute the board of directors.

At the annual meeting of the stockholders of the Massillon Foundry & Machine Co., Massillon, O., the following officers and directors were elected after a dividend had been declared: H. A. Croxton, president; J. C. Corns, vice president; Frank G. Harrison, secretary-treasurer; I. M. Taggart and F. W. Arnold.

The Northern Engineering Works, Detroit, has recently supplied traveling cranes to the Black Hills Traction Co., Deadwood; one 13-ton to the New Phoenix Foundry & Machine Co., Springfield, Mo.; one 15-ton to the city of Oswego, Oswego, N. Y., and two 7½-ton traveling cranes to the Western New York Construction Co.

The Williams Foundry & Machine Co., Akron, O., recently elected these officers and directors: President, J. K. Williams; vice president, Charles Williams; secretary and treasurer, C. Frantz; J. E. Bennett and J. W. Chamberlain. Reports for the year were satisfactory, and the outlook for the coming year excellent.

The following officers and directors of the Youngstown Steel Co., Youngstown, O., were elected at the recent annual meeting: President, E. L. Ford; vice president, Paul Jones; secretary and treasurer, John Stambaugh; David Tod and H. H. Stambaugh. The time of lighting the rebuilt Tod stack has not yet been decided.

The affairs of the Champion Saw & Engine Co., Beaver Falls, Pa., which have been in the hands of the receiver one year, have been closed out and the plant, stock, patents, etc., have been purchased by the Champion Saw & Machine Co., with new capital and new management. It is proposed by the new company to give special attention to the manufacture of the Champion saw, Champion bits and holders, milling saws, etc.

Trade Notes:—

C. W. Leavitt & Co., New York city, importers and selling agents of metals and alloys, advise that on and after March 20, their office will be located in the Hudson Terminal, Cortlandt building, 30 Church street, New York city.

The Independent Pneumatic Tool Co. has appointed Manning, Maxwell & Moore, Washington street and railroad avenue, Seattle, its exclusive representatives for the sale of its Thor pneumatic tools and appliances in the state of Washington, excepting Clarke county, and the territory of Alaska; and has also appointed the Portland Machine Co., 61 First street, Portland, Ore., its exclusive agent for the same line of pneumatic tools and appliances, and the county of Clarke, Wash. The company's business has shown decided increase in the districts mentioned in the past two months. and a complete line of its air appliances will be carried in stock in the cities mentioned.

There is a brisk demand for "Allen" portable pneumatic riveting machines, judging from sales reported recently by the sole manufacturer of these standard tools, John F. Allen, 370-372 Herard avenue, New York city. Two riveters each have been sold to the Kelly Mfg. Co., Waterloo, Ia., Memphis Steel Construction Co., Memphis, Tenn., and Harlan & Hollingsworth Co., Wilmington, Del. Orders for one riveter each have also been received from the Corby Supply Co., St. Louis, Mo.; Dyer Bros., San Francisco; William Scaife & Sons, Oakmont, Pa.; American Steel Co., Matanzas, Cuba; Reliance Motor Truck Co., Owosso, Mich.; Cananea, Yaqui River & Pacific R. R. Co., Senora, Mex.; Houston Structural Wheel Co., Houston, Tex. The order from the Harland & Hollingsworth Co. is the second "Allen" riveter sold to it within a period of three weeks.

FIRES:—

The foundry of Thomas Cascaden, Waterloo, Ia., was seriously damaged Feb. 9, the loss being placed at about $10,000.

The foundry of the Cahill Iron Works, Chattanooga, Tenn., was badly damaged. Feb. 12. The loss will reach probably $20,000, partially insured.

The loss on the Canadian Pacific railroad division shops and round house at Portage La Prairie, Man., Feb. 11, will reach probably $75,000.

The building occupied by the Pennsylvania Bronze Mfg. Co., Thirteenth and Cumberland streets, Philadelphia, was damaged to the extent of about $6,000 Feb. 16.

TRADE PUBLICATIONS.

TRANSMISSION MACHINERY.—The Dodge Mfg. Co., Toronto and Montreal, has issued an eight-page booklet devoted to transmission machinery, including shafting, hangers, pulleys, clutches, etc.

BRASS GOODS.—A 32-page catalog, 6 x 9 inches, has been issued by the Krahn Mfg. Co., Milwaukee. The catalog describes brass specialties for steam, gas, and gasoline engines, and automobile parts, including lubricators, brass nuts, air cocks, etc. It also lists metal patterns and facing cutters.

CONDENSING MACHINERY.—Dean Bros. Steam Pump Works, Indianapolis, has just sent out catalog No. 74 describing its condensing machinery. The catalog comprises 56 6 x 7½-inch pages and lists and describes jet and surface condensers, circulating and air pumps of various sizes and types. It also contains a discussion on condensing, and presents tables and formulæ of value in this connection.

COAL AND ASH HANDLING MACHINERY.—C. O. Bartlett & Snow Co. has issued a 48-page, 6 x 9-inch catalog No. 28, descriptive of steamship fueling lighters, with illustrations. The subject matter describes fully lighters built by this company for coaling steamers, mainly on the great lakes. Illustrations of various lighters in service are presented. Additional illustrations show shops with various types of coal and ash handling machinery installed.

SMOKE PREVENTERS.—The Climax Smoke Preventer Co., Equitable building, Boston, Mass., has issued a 10-page, 6 x 9-inch catalog illustrating the Climax smoke preventer. This is one of the familiar steam jet devices for the prevention of smoke from steam boiler furnaces.

NUT AND BOLT MACHINERY.—The National Machinery Co., Tiffin, O., is distributing its catalog E, just issued, comprising about 200 8½ x 11-inch pages, well printed and handsomely illustrated. It describes an extensive line of "National" machinery, including bolt and rivet headers, upsetting and forging machinery, bolt pointers, bolt cutters of various styles, sizes and capacities, nut machinery, nut tappers, shears, wire nail machines, etc. Complete descriptive details are presented concerning each machine, and the complete machine and the various parts are well illustrated. The catalog also comprises a number of useful tables for manufacturers of nuts and bolts, such as stock required to make standard bolt heads, nuts, different thread standards, lag screw tables, weights of bolts and nuts, dimensions of rivet heads, etc.

Opportunity!

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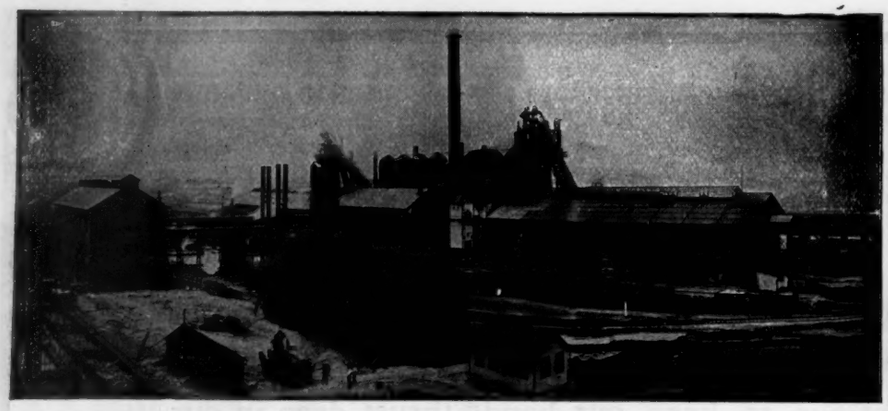

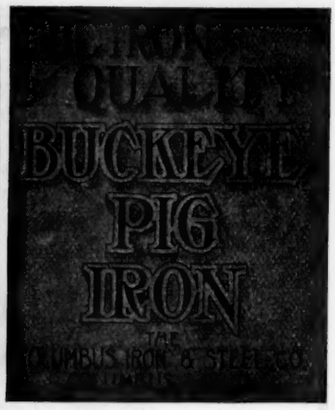

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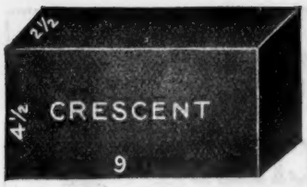

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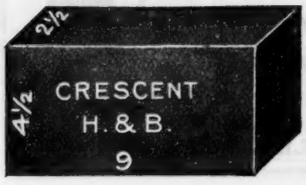

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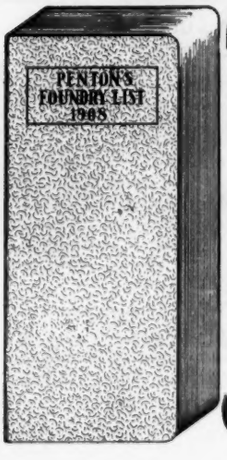

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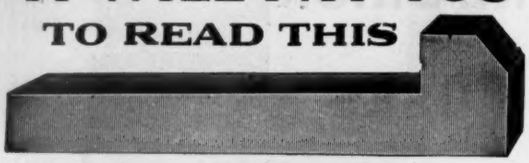

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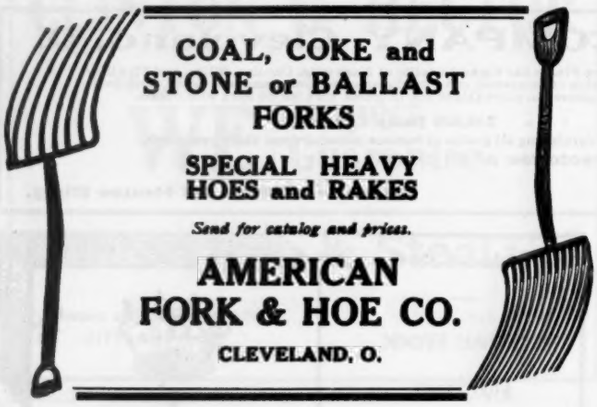

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ONE NO. 4 CASE HARDENING FURnace for sale, manufactured by the American Gas Furnace Co., of Elizabeth, N. J. The furnace has never been used. Address A. L. Sanger, Purchasing Agent, the C., H. & D., Cincinnati, O. p.

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In any quantity, metal or fibre. Dies, Stamping and Screw Machine Work. Quadriga Mfg. Co., 18 So. Canal St., Chicago, Ill. p.

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TAKE NOTICE. WE ARE BUYERS OF all grades of scrap metals, such as scrap copper, brass, lead, babbitt metals, factory metal skimmings, drosses, metal clippings, spelter, etc. Advise quality and quantity you have on hand to offer and we will name best prices f. o. b. your city. H. Kander & Co., Bowling Green, Ohio.

WANTED, MISCELLANEOUS.

WANTED, SECOND-HAND 2" SIZE, BELT driven pipe threading machine. Preferably E. C. & B. make. Must be in first-class working order and unbroken. Room 302 at 313 Sixth Ave., Pittsburg, Pa. p.

WANTED, ONE 20 OR 22" DRILL PRESS, also one emery grinder with countershaft, both second-hand. Please state condition and price of each, also maker's name. Emery grinder must swing 16" wheel. B. Barrett's Sons, Wooster, O. p.

WANTED, AN 85 TO 100 H. P. ENGINE for belt connection to 55 K. W. generator that will work in a space of 6 to 8 ft. in width and 10 to 15 ft. in length—a Russell, Buckeye or Ideal preferred. L. H. Shepherd Milling Co., Charlottte, Mich. p.

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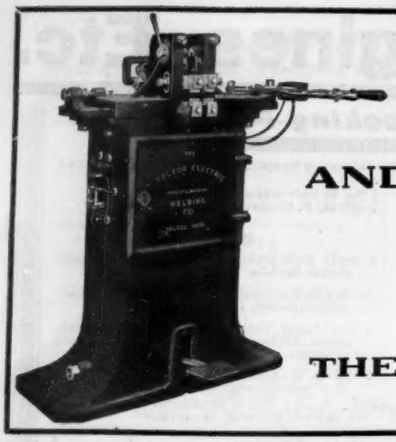

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